陸、附圖

圖 1、印尼植物檢疫生物安全中心主任 *Pak Antarjo Dikin* 博士於 2018 年 ICCBA 產業會議致詞

圖 2、澳大利亞 DAWR 助理次長 *Dean Merrilee* 先生於 2018 年 ICCBA 產業會議致詞

圖 3、2018 年 ICCBA 產業會議與會人員仔細聆聽印尼植物檢疫生物安全中心主任 *Pak Antarjo Dikin* 博士主講議題

圖 4、我國代表與印尼植物檢疫局植物檢疫生物安全中心 *Joni Hidayat* 先生(左)討論檢疫處理研發程序

圖 5、2018 年 ICCBA 產業會議 (上午場)綜合討論

圖 6、2018 年 ICCBA 產業會議 (下午場)綜合討論

圖 7、我國代表於 2018 年 ICCBA 產業會議分享與會心得

圖 8、2018 年 ICCBA 產業會議全體合影

圖 9、2018 年檢疫管理會議印尼植物檢疫局 *Ibu Banun Harpini* 局長開幕致詞

圖 10、我國代表茶敘時間與印度代表討論檢疫議題

圖 11、2018 年 ICCBA 會員大會我國代表座位一隅

圖 12、我國代表出席 ICCBA 指導委員會會議

圖 13、分組討論

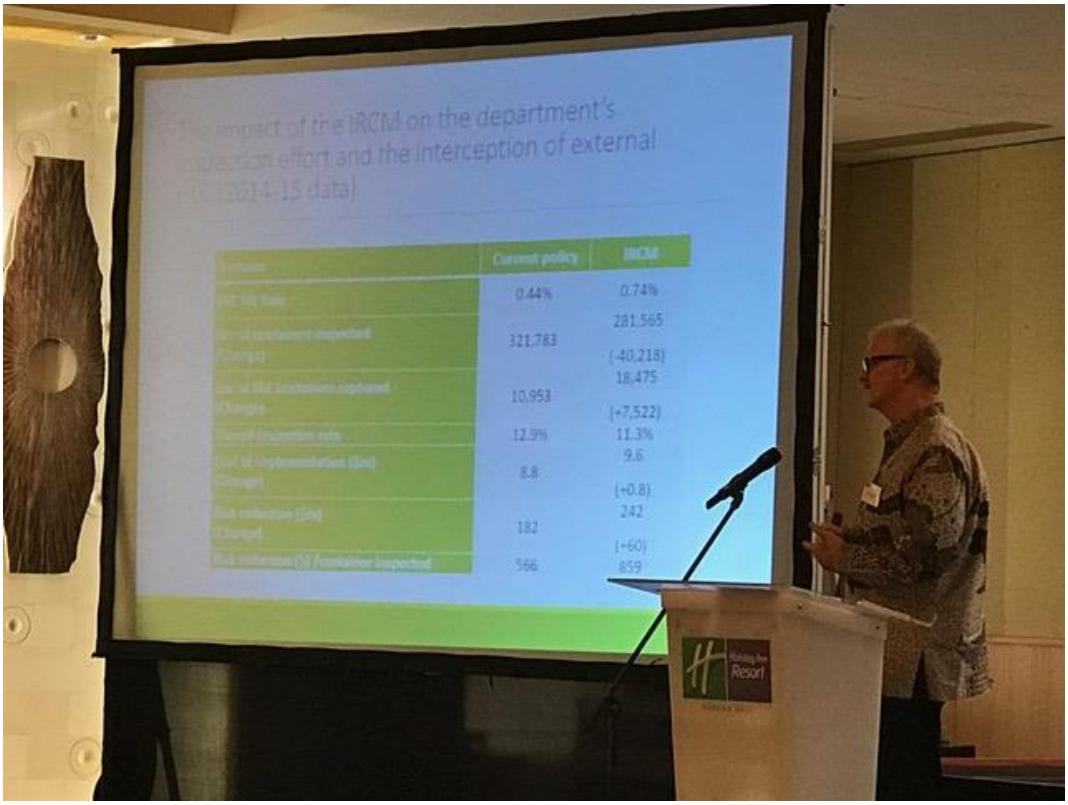


圖 14、DAWR *Dean Merrilees* 助理次長說明海運貨櫃清潔及綜合風險與合規模式

圖 15、 紐西蘭初級產業部 ***Jo-Anne Stokes*** 女士說明空運貨櫃清潔標準

圖 16、OIRSA 代表 ***Raúl Rodas*** 先生介紹澳大利亞燻蒸認證計畫線上學習課程

圖 17、IAQA *Ummu Salamah Rustiani* 博士簡介國家生物安全培訓中心(National biosecurity curriculum and training center)

圖 18、2018 年檢疫管理會議各國與會代表合影

圖 19、參訪印尼植物檢疫局核可位於峇里島 Karya Mandiri 公司環氧乙烷(Etylene Oxide, ETO)檢疫處理設施

圖 20、Karya Mandiri 公司環氧乙烷 (ETO)檢疫處理設施

圖 21、Karya Mandiri 公司經理介紹環氧乙烯 (ETO)燻蒸設施

圖 22、應用 EDN 燻蒸設施殺滅之有害生物種類

圖 23、參訪 **Karya Mandiri** 公司燻蒸設施後全體合影

圖 24、智利農業部 ***Andrea Lira Venegas*** 女士說明智利生物安全系統生物立法歷程

圖 25、STDF *Marlynne Hopper* 女士介紹導入 SPS 以促進安全貿易

圖 26、STDF 簡介影片分享

圖 27、紐西蘭初級產業部 ***Stu Rawnsley*** 先生說明紐澳電商郵件生物安全綠線措施

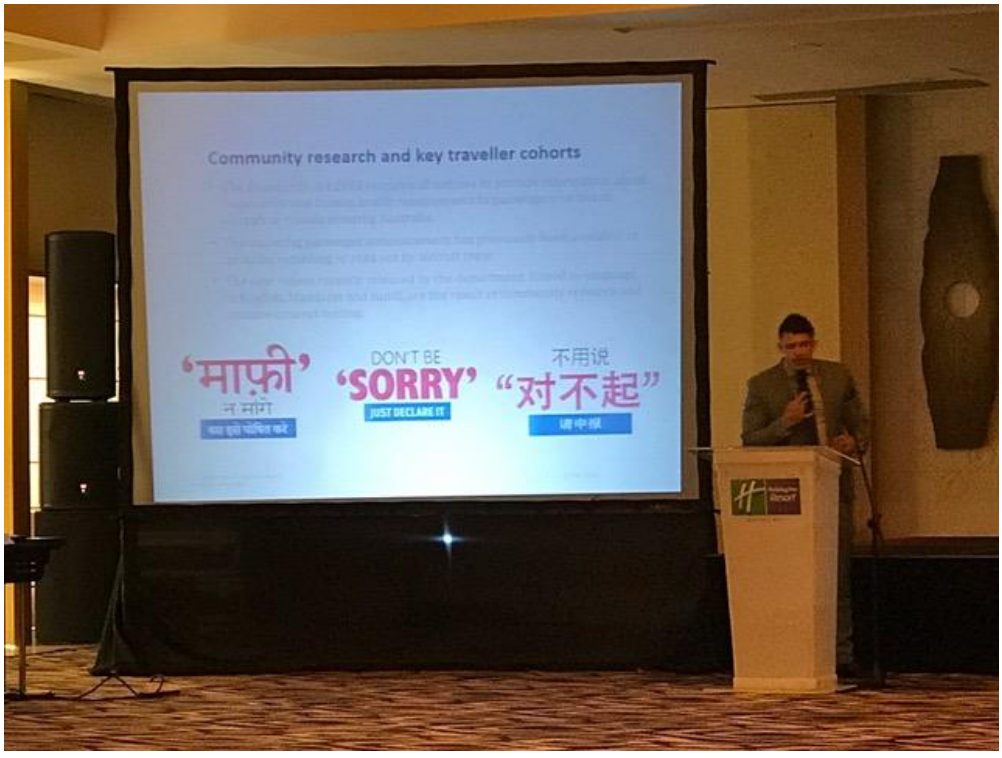


圖 28、秘書處 ***Stephen Peios*** 先生說明社群宣導

圖 29、DAWR *Stephen Peios* 先生主持分組討論並總結

圖 30、印尼植物檢疫局植物檢疫生物安全中心主任 ***Pak Antarjo Dikin*** 主持第 5 屆國際貨運生物安全合作協定指導委員會

圖 31、OIRSA 代表宣布為 2019 ICCBA 會議於巴拿馬舉行

圖 32、我國代表與 ICCBA 祕書處人員合影

附件目錄

附件21、Understanding Biosecurity Systems

附件22、Introduction to the Standards and Trade Development Facility

附件23、STDF-Facilitating Safe Trade: Going Paperless with SPS E-Certification

附件24、World Bank Group Trade Facilitation

附件25、Agreement on Trade Facilitation

附件26、Update on the IPPC Sea Container Task Force

附件27、Sea Container Cleanliness and the Integrated Risk and Compliance Model

附件28、Air Container Cleanliness Standard

附件29、National Biosecurity Curriculum and Training Center

附件30、E -Learning Course on AFAS Methyl Bromide Fumigation Standard

附件31、Implementing Legislation Change to Introduce Biosecurity Systems (AFAS in Chile)

附件32、Third Party Arrangements as a Control

附件33、Facilitating Safe Trade

附件34、AU-NZ eCommerce international mail Green Lane Trial

附件35、Community Engagement

附件36、Behavioural Insights

附件37、Alternative Quarantine Treatment

附件38、ICCBA Secretariat Report

附件39、ICCBA Steering Committee Terms of Reference

附件40、QRM Communiqué

附件1、5月7日至11日會議行程

Five-day plan

DAY ONE: Monday 7 May 2018

Morning	Industry seminar – host IAQA
Afternoon	Industry seminar – host IAQA

DAY TWO: Tuesday 8 May 2018

Morning	ICCBA Technical Working Groups
Afternoon	ICCBA plenary session
Evening	Welcome Reception and QRM delegate registration

DAY THREE: Wednesday 9 May 2018

Morning	Quarantine Regulators Meeting – day one
Afternoon	Quarantine Regulators Meeting

DAY FOUR: Thursday 10 May 2018

Morning	Field Trip
Afternoon	Cultural experience
Evening	Official QRM Dinner

DAY FIVE: Friday 11 May 2018

Morning	Quarantine Regulators Meeting – day three
Afternoon	Quarantine Regulators Meeting
Afternoon	5th ICCBA Steering Committee Meeting

附件 2、2018 年 ICCBA 產業會議議程及演講者簡介

Australian Government
Department of Agriculture and Water Resources

ICCBA
International Cargo Cooperative Biosecurity Arrangement

ICCBA Industrial Conference 2018

"Engagement and Partnership on Supporting Biosecurity Compliance"

HOLIDAY INN RESORT BARUNA, BALI, INDONESIA

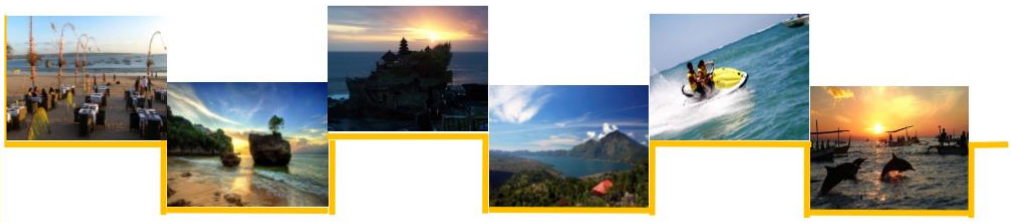
MAY 7TH, 2018

ICCBA Industrial Conference 2018

INTRODUCTION

ICCBA (International Cargo Cooperative Biosecurity Arrangement) is a voluntary, non-binding multilateral arrangement that provides national biosecurity agencies, with a platform for collaborating on biosecurity initiatives. The ICCBA aims to provide rigor around the operational implementation and management of biosecurity policies that are developed by bodies such as the International Plant Protection Convention (IPPC).

ICCBA Industrial Conference as a part of 2018 QRM, an annual meeting for quarantine regulators, will be attended by up to 200 participants from overseas and local, including government agencies, industries, and private sectors interested on biosecurity measures. Overseas government agencies are delegation of QRM, whilst in local are from agencies work on area of plant quarantine and plant protection, marine transportation, foreign affairs, international trade, forestry and environment, mail services and customs. Overseas industries participating in this conference are from countries member of ICCBA, including Indonesian Methyl Bromide Treatment Provider Association (ASPPHAMI) and Indonesian Wood Packaging Provider Association (APJASKINDO).



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Engagement and Partnership on Supporting Biosecurity Compliance

CONFERENCE PROGRAM

Time	No	Agenda/Topics
08.00 – 09.00	1	**Registration**
09.00 – 09.30	2	**Official Welcome** • Dr. Antarjo Dikin *(Director - Centre for Plant Quarantine and Biosafety, Indonesian Agricultural Quarantine Agency - IAQA)* • Mr. Dean Merrilees *(Assistant Secretary - Australian Department of Agriculture and Water Resources - DAWR)*
09.30 – 10.00	3	Morning tea/coffee
10.00 – 10.30	4	Advancing biosecurity systems through the implementation of ICCBA Schedules Treatment: **"Towards the Implementation of ICCBA Methyl Bromide Treatment Schedule "** *(Mr. Nathan Reid - ICCBA Secretariat)*
10.30 – 11.00	5	Overview: **"Development of Initiative Phytosanitary Treatments in Indonesia"** *(Mr. Joni Hidayat - Applied Research Institute of Agricultural Quarantine - ARIAQ, IAQA)*
11.00 – 11.30	6	Partnering with stakeholders to achieve better biosecurity outcomes: **Indonesian Experience on the Engagement & Partnership for Supporting Biosecurity Compliance"** *(Mr. Boyke Arie Pahlevi – Chairman for Indonesian Methyl Bromide Treatment Provider Association, ASPPHAMI)*

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ICCBA Industrial Conference 2018

CONFERENCE PROGRAM

11.30 – 12.00	7	Partnering with stakeholders to achieve better biosecurity outcomes: **"Australian Experience on the Implementation of Vessel Compliance Scheme (VCS)"** *(Mr. Dean Merrilees - Assistant Secretary, Australian Department of Agriculture and Water Resources - DAWR)*
12.00 – 13.30	8	Luncheon
13.30 – 14.00	9	*Biosecurity challenge and its Solution:* **"New Zealand Experience on Managing Biosecurity Risk on E-Commerce"** *(Mr. Stuart Rawnsley — Manager North Cargo, Ministry for Primary Industries (MPI), New Zealand)*
14.00 – 14.30	10	Innovation: **"The Speed Box, an Innovative Application Device for Alumunium Phosphide Fumigation"** *(Dr. Alexander Zrely — on behalf of Phytosanitary Association of Ukraine)*
14.30 – 15.00	11	Innovation: **"Solvay Cylinderized Phosphine Fumigants for Quarantine and Pre-shipment Application of Selected Food and Non-Food Commodities"** *(Mr. Mathew Murphy — Asia Pacific Regional Sales Manager, Phosphine Gas Fumigants, Phosphorous Specialties, Solvay)*
14.30 – 15.00	12	Alternative fumigant: **"The EDN (ethanedinitrile), A Newly Fumigant Potential for Phytosanitary treatment"** *(Dr. Swaminathan — Draslovka Services Pty. Ltd., Australia)*
15.30 – 16.00	13	Afternoon tea/coffee
16.00 – 16.30	14	General discussion and Closing *(Dr. Antarjo Dikin — IAQA)*

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Engagement and Partnership on Supporting Biosecurity Compliance

SPEAKERS PROFILE

"Towards the Implementation of ICCBA Methyl Bromide Treatment Schedule"

NATHAN REID
ICCBA SECRETARIAT

Nathan has worked for the Australian Department of Agriculture and Water Resources for 20 years. He is the Director of the Compliance Partnerships section with responsibility for managing several of Australia's international capacity building and biosecurity risk mitigation initiatives. Nathan is an alternate on the International Plant Protection Convention's Implementation Committee and also serves as the Secretariat to the International Cargo Cooperative Biosecurity Arrangement (ICCBA) where he brings his vast experience in international government-to-government arrangements and trade facilitation to the role. Nathan has been a driving force in the establishment of ICCBA and the development of its subsequent biosecurity measures.

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ICCBA Industrial Conference 2018

SPEAKERS PROFILE

"Overview: Initiative Phytosanitary Treatments in Indonesia"

JONI HIDAYAT
Plant Quarantine Officer, Applied Research Institute of Agricultural Quarantine (ARIAQ)

Hidayat has worked for IAQA as plant quarantine officer since 2008. Hidayat has involved in applied research for phytosanitary treatments conducted by ARIAQ, i.e hot water treatment, irradiation, and fumigation.

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Engagement and Partnership on Supporting Biosecurity Compliance

SPEAKERS PROFILE

"Indonesian Experience on The Engagement & Partnership for Supporting Biosecurity Compliance"

BOYKE ARIE PAHLEVI

Chairman for Indonesian Methyl Bromide Treatment Provider Association (ASPPHAMI)

Pahlevi has involved in Indonesian Methyl Bromide Treatment Provider Association (ASPPHAMI) since 2006. At present, he is the Chairman for ASPPHAMI and Indonesian Chamber of Commerce.

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ICCBA Industrial Conference 2018

SPEAKERS PROFILE

"Australian Experience on the Implementation of Vessel Compliance Scheme"

DEAN MERRILEES

Assistant Secretary, Australian Department of Agriculture and Water Resources

Dean is currently the Assistant Secretary, Compliance Controls Branch in Compliance Division within the Australian Government Department of Agriculture and Water Resources. In this role he leads a team responsible for policy to manage biosecurity risk for the cargo, international mail, travelers and vessels pathways.

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Engagement and Partnership on Supporting Biosecurity Compliance

SPEAKERS PROFILE

"New Zealand Experience on Managing Biosecurity Risk on E-Commerce"

STUART RAWNSLEY

Manager North Cargo, Ministry for Primary Industries (MPI), New Zealand

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ICCBA Industrial Conference 2018

SPEAKERS PROFILE

"The Speed Box, An Innovative Application Device for Alumunium Phosphide Fumigation"

DR. ALEXANDER ZRELY

Vice President, Phytosanitary Association of Ukraine

Zrely has experience in sea shipping, pest control, and maritime fumigation for 18 years. He is FAO's Consultant as international fumigation expert in Egypt, Ukraine, Nepal, and Pakistan for 2007 – 2015. At present, Zrely is the Vice-President of Phytosanitary Association of Ukraine.

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Engagement and Partnership on Supporting Biosecurity Compliance

SPEAKERS PROFILE

"Solvay Cylinderized Phosphine Fumigants for Quarantine and Pre-shipment Application of Selected Food and Non-Food Commodities"

MATHEW MURPHY

Asia Pacific Regional Sales Manager, Phosphine Gas Fumigants, Phosphorous Specialties, Solvay

Murphy is Asia Pacific Regional Sales Manager, Phosphine Gas Fumigants, Phosphorus Specialties, Solvay. He is responsible for sales and marketing of Solvay cylinderized phosphine fumigants in Asia Pacific region.

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ICCBA Industrial Conference 2018

SPEAKERS PROFILE

"The EDN (ethanedinitrile), A Newly Fumigant Potential for Phytosanitary Treatment"

DR. SWAMINATHAN,

Draslovka Services Pty. Ltd., Australia

Swaminathan is the Regulatory Affairs Specialist within Draslovka Services Private Limited, Australia. He is responsible for fumigant research, development, registration, and biosecurity approval for EDN as fumigant for soil, timber and logs (post-harvest), in many countries including Asia Pacific, Middle East, US Regions, and Australia. Currently, he is working with NZ, Australia, USDA, India and Chinese biosecurity to gain EDN approval for timber and logs as quarantine treatment and also participating in the ISPM-15 study for the approval of EDN.

附件3、第5屆國際貨運生物安全合作協定全體會議(ICCBA Plenary)議程

International Cargo Cooperative Biosecurity Arrangement

ICCBA Plenary Day
8 May 2018
Holiday Inn Resort Baruna
Denpasar, Indonesia

Agenda number	Topic	Person responsible
1	Welcome and Introduction	Chair
2	Methyl Bromide Methodology	All
3	Proposed study into methyl bromide fumigations	New Zealand
4	Methyl Bromide Schedule	All
5	JSR process discussion	Australia
6	Heat Treatment Methodology	All
7	ICCBA Arrangement Review	All
8	ICCBA Steering Committee Meeting Plenary Session	All
9	General Business	All
10	Meeting Close	Chair

附件4、2018年檢疫管理會議議程

9 to 11 May 2018
Holiday Inn Resort Baruna
Denpasar, Indonesia

Day One: Wednesday 9 May, 2018		
Time	**Agenda item**	**Topic**
08:30am–09:00am	**Arrival tea and coffee**	
9:00am – 9:15am	*1a*	**Welcoming address:** *Ibu Banun Harpini, Indonesian Agricultural Quarantine Agency*
9:15am – 9:30am	*1b*	**Welcoming address:** *Mr Dean Merrilees, Australian Department of Agriculture and Water Resources*
9:30am – 9:45am	*2*	**10 years of the QRM** *Mr Nathan Reid, Australian Department of Agriculture and Water Resources*
9:45am – 10:30am	*3*	**Understanding biosecurity systems** *Mr Nathan Reid, Australian Department of Agriculture and Water Resources*
10:30am – 11:00am	**Morning tea (*Official photo)***	
11:00am – 11:30am	*4*	**Implementing new legislation to accelerate export/import services activity** *Dr Arifin Tasrif, Indonesian Agricultural Quarantine Agency*
11:30am – 12:00pm	*5*	**Introduction to the Standards and Trade Development Facility** *Ms Marlynne Hopper, Standards and Trade Development Facility*
12:00pm – 1:00pm	*6*	**Current and emerging issues workshop (title TBC)** *Mr Stephen Peios, Australian Department of Agriculture and*

		Water Resources
1:00pm – 1:30pm	**Lunch**	
1:30pm – 2:00pm	*7*	**World Bank Group Trade Facilitation** *Ms Theresa Morrissey, World Bank*
2:00pm – 2:30pm	*8*	**Update on the IPPC Sea Container Task Force** *Ms Theresa Morrissey, World Bank*
2:30pm – 3:00pm	*9*	**Sea container cleanliness and the Integrated Risk and Compliance Model** *Mr Dean Merrilees, Australian Department of Agriculture and Water Resources*
3:00pm – 3:30pm	*10*	**Air container cleanliness standard** *Ms Jo-Anne Stokes, New Zealand Ministry for Primary Industries*
3:30pm – 4:00pm	**Afternoon tea**	
4:00pm – 4:30pm	*11*	**National biosecurity curriculum and training center** *Dr Ummu Salamah Rustiani, Indonesian Agricultural Quarantine Agency*
4:30pm – 5:00pm	*12*	**e-Learning course on AFAS Methyl Bromide Fumigation Standard** *Mr Raúl Rodas, Organismo Internacional Regional de Sanidad Agropecuaria*

Day Two: Thursday 10 May, 2018 – Field Trip		
Time		**Activity**
7:20am		**All participants ready in foyer to depart for QRM Field Trip**
7:30am – 8.30am		**Travel time from Holiday Inn Baruna Bali to Uluwatu**
8.30am – 10.30am		**Cultural experience at Uluwatu (exploring picturesque views of Uluwatu and a visit to Pura Luhur - Uluwatu)**
10.30am – 11.00am		**Depart Uluwatu and travel to Pandawa beach**
11.00am – 12.00pm		**Cultural experience at Pandawa beach**
12.00pm – 12.30pm		**Depart Pandawa Beach and travel to Ethylene Oxide (ETO) Facility**
12.30pm – 14-00pm		**Visit ETO facility and have lunch.**
14.00pm – 14.30pm		**Depart ETO facility and travel to coffee export facility (Domba coffee factory)**
14.30pm – 15.30pm		**Domba coffee factory visit**
15.30pm – 16.00pm		**Travel to Krisna Shopping Centre**
16.00pm – 17.00pm		**Shopping at Krisna Shopping Centre**
17.00pm – 17.30pm		**Travel back to Hotel**
17.30pm – 19.00pm		**Free time at Hotel**
19:00pm		**Official QRM Dinner at the Holiday Inn Resort Baruna, hosted by the Indonesian Agricultural Quarantine Agency**

Day Three: Friday 11 May, 2018

Time	Agenda Item	Topic
8:30am – 9:00am	**Arrival tea and coffee**	
9:00am – 9:15am	*13*	**Summary of days one and two** *Mr Dean Merrilees / Pak Antarjo Dikin*
9:15am – 9:30am	*14*	**Implementing legislation change to introduce biosecurity systems (AFAS in Chile)** *Ms Andrea Lira Venegas, Chilean Servicio Agricola y Ganadero*
9:30am – 10:00am	*15*	**Responding to a major incident** *Mr Stu Rawnsley, New Zealand Ministry for Primary Industries*
10:00am – 10:30am	*16*	**Best practice for biosecurity surveillance** *Mr Stephen Peios, Australian Department of Agriculture and Water Resources*
10:30am – 11:00am	**Morning tea**	
11:00am – 11:30am	*17*	**Third party arrangements as a control** *Mr Nathan Reid, Australian Department of Agriculture and Water Resources*
11:30am – 12:00pm	*18*	**Facilitating safe trade** *Ms Marlynne Hopper, Standards and Trade Development Facility*
12:00pm – 12:30pm	*19*	**Trailing a biosecurity green lane** *Mr Stu Rawnsley, New Zealand Ministry for Primary Industries*
12:30pm – 1:30pm	**Lunch**	
1:30pm – 1:50pm	20	**Community Engagement** *Mr Stephen Peios, Australian Department of Agriculture and Water Resources*
1:50pm – 2:20pm	*21*	**Behavioral insights** *Mr Nathan Reid, Australian Department of Agriculture and Water Resources*
2:20pm – 2:50pm	*22*	**Alternative Quarantine Treatments** *Mr Nitesh Datt, Biosecurity Authority of Fiji*

2:50pm – 3:10pm	**Afternoon Tea**	
3:10pm – 3:30pm	*23*	**Current and emerging issues workshop (title TBC) – conclusion** *Mr Stephen Peios, Australian Department of Agriculture and Water Resources*
3.30pm – 5:00pm		**5th International Cargo Cooperative Biosecurity Arrangement Steering Committee meeting**

附件5、第5屆國際貨運生物安全合作協定指導委員會(ICCBA Steering Committee Meeting)會議議程

ICCBA Steering Committee Meeting
Meeting 5
3:30 - 4:00pm, Friday 11 May 2018
Holiday Inn Resort Baruna
Denpasar, Indonesia

Agenda number	Topic	Person responsible
1	Welcome and Introduction	Chair
2	Nomination of Chair for ICCBA Steering Committee Meeting 5	All
3	Action Items from Steering Committee Meeting 4	Chair
4	Secretariat Report	Secretariat
5	Review of ICCBA – progress update	Chair
6	Technical Working Groups' (TWG) Recommendations	TWG/Chair
7	General Business	All
8	Meeting Close	Chair

附件6、ICCBA及QRM相關會議與會名單

Australian Government
Department of Agriculture and Water Resources

ICCBA
International Cargo Cooperative Biosecurity Arrangement

List of Participant

ICCBA Industrial Conference

Holiday Inn Resort Baruna, Bali, Indonesia

Monday, 7th May 2018

No	Country	Delegate	Institution/Company	Email
QRM Delegation				
1.	Australia	Mr NATHAN REID	Department of Agriculture and Water Resources	nathan.reid@agriculture.gov.au
2.	Australia	Mr STEPHEN PEIOS	Department of Agriculture and Water Resources	stephen.peios@agriculture.gov.au
3.	Australia	Mr SAM GRIFFITHS	Department of Agriculture and Water Resources	sam.griffiths@agriculture.gov.au
4.	Australia	Mr DEAN MERRILEES	Department of Agriculture and Water Resources	dean.merriless@agriculture.gov.au
5.	Australia	Ms TRISH GLEESON	Department of Agriculture and Water Resources	trish.gleesons@dfat.gov.au
6.	Cambodia	Mr CHEA HO	Plant Protection Sanitary and Phytosanitary Department, General Directorate of Agriculture	ho.chea@yahoo.com
7.	Cambodia	Mr SEREIVUTH LY	Plant Protection Sanitary and Phytosanitary Department, General Directorate of Agriculture	lysereivuth@gmail.com
8.	Chile	Ms LETICIA VENEGAS	Servicio Agricola y Ganadero	leticia.venegas@sag.gob.cl
9.	Chile	Ms ANDREA LIRA	Servicio Agricola y Ganadero	andrea.lira@sag.gob.cl
10.	Fiji	Mrs ANEI RURUNACAGI	Biosecurity Authority of Fiji	arurunacagi@baf.com.fj
11.	Fiji	Mr MOHAMMED AIYAZ	Biosecurity Authority of Fiji	maiyaz@baf.com.fj
12.	Fiji	Mr NITESH DATT	Biosecurity Authority of Fiji	ndatt@baf.com.fj
13.	Fiji	Mr SUREND PRATAP	Biosecurity Authority of Fiji	spratap@baf.com.fj
14.	Fiji	Mr RONALD PRASAD	Biosecurity Authority of Fiji	rprasad@baf.com.fj
15.	India	Mr OM PRAKASH VERMA	Department of Plant Protection, Quarantine and Storage	op.verma62@gov.in; opvermaddpp@gmail.com

No	Country	Delegate	Institution/Company	Email
16.	India	Mr KUMAR SURESH	Department of Plant Protection, Quarantine and Storage	sureshkloll@yahoo.co.in; krsuresh80@gov.in
17.	Indonesia	Dr ANTARJO DIKIN	Indonesian Agricultural Quarantine Agency	antarjo.dikin@yahoo.com
18.	Indonesia	Mr TURHADI NOERACHMAN	Indonesian Agricultural Quarantine Agency	turhadi.noerachman@gmail.com
19.	Indonesia	Ms APRIDA CRISTIN	Indonesian Agricultural Quarantine Agency	apridacristin@yahoo.com
20.	Indonesia	Ms RATIH RAHAYU	Indonesian Agricultural Quarantine Agency	rahayu.ratih@gmail.com
21.	Japan	Mr KIYOFUMI ABE	Food Safety and Consumer Affairs Bureau, Ministry of Agriculture, Forestry and Fisheries	
22.	Japan	Mr RYOSUKE KIMURA	Food Safety and Consumer Affairs Bureau, Ministry of Agriculture, Forestry and Fisheries	
23.	Korea, Republic of	Mr MINGOO PARK	Animal and Plant Quarantine Agency	pmg@korea.kr
24.	Laos	Dr SOULAPHONE INTHAVONG	Department of Agriculture, Ministry of Agriculture and Forestry	suinthavong@yahoo.com
25.	Laos	Mrs THATSANALY SAPHANGTHONG	Department of Agriculture, Ministry of Agriculture and Forestry	thatsanaly@yahoo.com
26.	Malaysia	Mr MOHD RIDZUAN ISMAIL	Plant Biosecurity Division, Malaysian Department of Agriculture	moridzis@yahoo.com
27.	Malaysia	Mr ABDULLAH FAUZI SAMSUDIN	Plant Biosecurity Division, Malaysian Department of Agriculture	abdullahfauzi@doa.gov.my
28.	Myanmar	Ms TIN-TIN OO	Plant Protection Division, Department of Agriculture, Ministry of Agriculture, Livestock and Irrigation	tintinoopq@gmail.com
29.	Myanmar	Mr AUNG THU	Plant Protection Division, Department of Agriculture, Ministry of Agriculture, Livestock and Irrigation	thudear@gmail.com
30.	New Zealand	Mr STUART RAWNSLEY	Ministry for Primary Industries	stu.rawnsley@mpi.govt.nz
31.	New Zealand	Ms JO-ANNE STOKES	Ministry for Primary Industries	Jo-Anne.Stokes@mpi.govt.nz
32.	OIRSA	Mr RAUL ANTONIO RODAS SUAZO	Organismo Internacional Regional de Sanidad Agropecuaria (OIRSA)	rrodas@oirsa.org
33.	OIRSA (El Salvador)	Mr EFRAIN MEDINA GUERRA	Organismo Internacional Regional de Sanidad Agropecuaria (OIRSA)	emedina@oirsa.org; dejecutiva@oirsa.org
34.	Papua New Guinea	Mr ALPHONSE BANNICK	National Agriculture Quarantine and Inspection Authority	abannick@naqia.gov.pg

No	Country	Delegate	Institution/Company	Email
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附件7、Towards the implementation of ICCBA Methyl Bromide Treatment Schedule

ICCBA

International Cargo Cooperative Biosecurity Arrangement

Advancing biosecurity systems through the implementation of ICCBA treatment schedules

Towards the Implementation of ICCBA Methyl Bromide Treatment Schedule

Nathan Reid
ICCBA Secretariat

The importance of biosecurity

Biosecurity is a set of measures designed to reduce the risk of pests and diseases threatening the health of the environment and the economy.

Biosecurity is vital to facilitating international trade.

International approach to biosecurity

- Biosecurity is a shared responsibility
    - International governments
    - Industry along the supply chain
- Biosecurity requires an integrated approach
    - Starts offshore
    - Continues to the border
    - Extends onshore

Australian Fumigation Accreditation Scheme (AFAS)

- Established in 2004
- Bilateral arrangement
- Builds industry capacity in fumigation
- Builds government capacity to manage treatment system
- Creates confidence with trading partners

AFAS countries implemented and undergoing implementation

Papua New Guinea Lao PDR Peru Philippines India
Indonesia Fiji Malaysia Sri Lanka Thailand Vietnam
New Zealand Solomon Islands Chile China Central America
Cambodia Myanmar

ICCBA

ICCBA
International Cargo Cooperative Biosecurity Arrangement

- Builds on success of AFAS
- Multilateral, reciprocal arrangement
- Increased confidence with trading partners
- Coordinated approach to border management and risk identification

ICCBA Members and areas considering joining

Papua New Guinea Peru Philippines Chile Central America
Indonesia Fiji New Zealand Malaysia Thailand Australia
Taiwan Vietnam Lao PDR Solomon Islands India
Sri Lanka China Cambodia South Korea

What does this mean?

- All methyl bromide fumigations performed to the same standard for all ICCBA members
- Only one endorsed methyl bromide standard to follow
- Only one treatment provider accreditation required for fumigation to all ICCBA countries

Changes to the Standard

Methyl Bromide Standard

MANDATORY
This column lists conditions that **MUST** be achieved and actions which **MUST** be undertaken in order to conform to the requirements of the AFAS Standard.

INFORMATIVE
This column lists information that may be helpful to a fumigator in achieving the Mandatory Requirement.

ICCBA Methyl Bromide Methodology

- **Methyl Bromide Methodology**

Easy to read document with all requirements that must be met for every fumigation

- **Methyl Bromide guide**

Includes information on fumigation best practice and problem solving during a fumigation

ICCBA alternative treatments

Treatments being developed:

- Methyl bromide
- Heat Treatment

Alternatives for future inclusion:

- ?

附件8、Development of Initiative Phytosanitary Treatments in Indonesia

OVERVIEW
DEVELOPMENT OF INITIATIVE PHYTOSANITARY TREATMENTS IN INDONESIA

JONI HIDAYAT

APPLIED RESEARCH INSTITUTE OF AGRICULTURAL QUARANTINE
INDONESIAN AGRICULTURAL QUARANTINE AGENCY
2018

INTRODUCTION

- ARIAQ (Applied Research Institute of Agricultural Quarantine) the center science of innovation of applied research for phytosanitary treatment
- Various treatments have been testing for potential phytosanitary treatments in chemical treatment fumigation using Liquid Phosphine, Ethyl Formate, Sulfuryl Fluoride, and Methyl Bromide
- Physical treatment i.e hot water treatment, air heat treatment, cold treatment, and gamma ray.

Achievement of research supports to meet market access

Export commodity	Treatment target
Mango fruits var. Gedong	HWT at 47-48^{0}C for 5 minutes, effectively eradicated *B. papayae* and reduced *C. gloeosporioides* infection
Muskmelon (*Cucumis melo*)	HWT at 46 °C for 20 minutes effective for disinfestation of *B. cucurbitae*
Banana var. Mas Kirana	HWT at 48 °C for 20 minutes effective to inhibit the growth of *Colletotrichum musae* and prolong the shelf life of banana var. Mas Kirana up to 18 days

HOT WATER TREATMENT (HWT)

Export commodity	Treatment target
Mango	Ethyl formate fumigation 37,08 g/m^3 exposure time 1 hour, at 17 °C eradicated *Planacoccus minor*
Mangosteen, Strawberry and Banana	Ethyl Formate (EF) fumigation 37,08 g/m^3 exposure time 1 hour, at 17 °C eradicated mealybug *Dysmicoccus sp.*
Mango	Gamma irradiation [^{60}Co] at minimum dose 200 Gy sterilized adult *S. frigidus*
Mangosteen	Gamma ray [^{60}Co] sterilized mealybug *Exallomochlus hispidus* Dose 110 Gy was effective for *E. hispidus* 100% sterilization

Gamma Ray Ionization

packing of mangoes

irradiation exposes mangoes at a dose of 400 Gy

observation of fruit quality

Observation of insect

Export commodity	Treatment target
Mangosteen, Pineapple, Orchid (*Phalaenopsis sp.*)	Liquified phosphine fumigation 200 ppm PH3 exposure time 7 hours, at 25-26 °C eradicated mealybug
Crysanthemum and rose cut flowers	Liquified phosphine fumigation 380 ppm PH3 exposure time 12 hours, at 25-26 °C effective for disinfestation eggs of *Thrips parvispinus*
Crysanthemum cut flowers	Liquified phosphine fumigation 950 ppm PH3 exposure time 9 hours, at 25-26 °C was effective to eradicate *Macrosiphoniella sanborni*
Wood log	Sulfuryl Fluoride fumigation 20 g/m^3 exposure time 18 hours, at 26-32 °C eradicated wood boring beetle (*Dinoderus minutus*, *Lyctus brunneus, Heterobrostrychus aequalis* , *Araecerus fasciculatus*)

Badan Karantina Pertanian
TangguhTerpercaya
www.karantina.pertanian.go.id

Liquified Phosphine Fumigation

Badan Karantina Pertanian
TangguhTerpercaya
www.karantina.pertanian.go.id

Import commodity	Treatment target
Rice Seeds	HWT at 56 ^{o}C for 30 minutes, followed by dipping in copper hydroxide compound 2000 ppm for 60 minutes, followed by drying at 40 ^{0}C for 24 hours eliminated *Burkholderia glumae*
Rice Seeds	Sulfuryl Fluoride fumigation 60 g/m^3 exposure time 72 hours; 140 g/m^3 exposure time 24 hours; 160 g/m^3 exposure time 24 hours effective to eradicate *Aphelenchoides besseyi*, without declining germination ability
Sweet Corn Seeds	Sulfuryl Fluoride fumigation 60 g/m^3 exposure time 24 hours at 26-32 °C (CT product 1440 g.h/m^3) effective to eradicate *Sitophilus zeamais*

Combination of hot water treatment and copper hydroxide to eliminate *Burkholderia glumae* associated with rice seeds

infected seed with bacteria

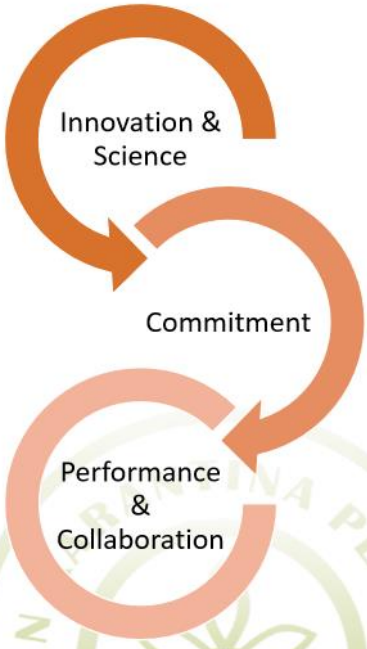
HWT on 56 ^{0}C for 30 mnt

soaking into 2000 ppm of copper hydroxide for 60 mnt

Drying on 40-45 ^{0}C

seed packaging

Import commodity	Treatment target
melon seeds	A combination of dipping melon seeds in 1160 ppm CuSO4 for 1 hour and dry heat treatment at 75 °C for 5-7 days eliminated *Acidovorax citrulli*
Mandarin Citrus	Cold treatment at 3°C for 18 days eradicated larvae of *B. cucurbitae*
Soybean seeds	Dry heat treatment 70 °C for 5 hours effectively inhibited *Pestalotia* sp. associated with soybean seed



TOWARD WORLD CLASS CENTER OF EXCELLENT

Badan Karantina Pertanian
TangguhTerpercaya
www.karantina.pertanian.go.id

附件9、Indonesia Experience on the Engagement & Partnership for Supporting Biosecurity Compliance

THE PURPOSE

The purpose of establishment of ASPPHAMI is :

A. Collect and nurture a sense of solidarity National Company engaged in Pest Control Industry.
B. Improving the ability and quality of members in organizing environmentally sound Pest Control services.
C. As a forum for gathering and bonding of similar companies, ASPPHAMI is a non-political organization.

VISION & MISSION ASPPHAMI

VISION

ASPPHAMI has a vision to be professional, credible, competent company association to improve the quality of people's lives, environment and settlement

VISION & MISSION ASPPHAMI

MISSION

A. To collect and develop Pest Control Companies to improve the quality of public health, environment and settlement.
B. Improving the capability and quality of human resources of the members.
C. Become a credible partner for government agencies and the private sector
D. Educate and awaken the public

PURPOSE AND FUNCTION OF ASPPHAMI

1. As a vehicle of communication, information, representation, consultation, facilitation of pest control companies.
2. Collect and nurture a sense of solidarity with ASPPHAMI members.
3. Protect the interest of members and prevent the emergence of unhealthty business competition in the pest control business.
4. Improving the ability and knowledge of human resource of its members in the field of pest control in line with technological advances in vaious fields.

ASPPHAMI SERVICES AREA

34 province and 506 districs/cities

ASPPHAMI membership throughout Indonesia amounts to 400 companies, and 90 companies are listed as Barantan members.

THE ROLE OF ASPPHAMI IN SUPPORTING BIOSECURITY COMPLIANCE

1. *As Strategic Partner of Government / Agricultural Quarantine Agency in the implementation of Phytosanitary Treatment by third party.*

   - Bridging the interest of Agricultural Quarantine Agency and Fumigator in the implementation of quarantine Treatment.

   - Protecting the interest of the Pest Control Industries (Fumigation) by upholding the ethics and professionalism of the member in participating development occuring both nationally and internationally.

2. *As Instrument Control in fumigation quality assurance*

   - Implementation of fumigation must be carried out with established SOPs and with good and consistent quality.

   - Creating a healthy business competition, so that the implementation of fumigation must follow SOP.

ASPPHAMI & BARANTAN ACTIVITIES

1. Beginning in 2004 Launching Fumigation Scheme of Plant Quarantine Agency (SAB Barantan)
2. Preparation of Fumigation Company Registration Guide
3. Preparation of Fumigation Technique Manual with Methyl Bromide, PH3 & Sulfuryl Fluoride
4. Preparation & Review of Quality Management System of Fumigation Company
5. Fumigation Competency Training (Fumigator) of Fumigation Company

ASPPHAMI & BARANTAN ACTIVITIES

6. Training of Helper Workers Fumigation Company
7. Enhanced Product Knowledge Fumigator through the Refreshment Program
8. Review of SAB Implementation (SAP- Audit Systems and Rating)


PELATIHAN
TENAGA KOMPETEN


PELATIHAN TENAGA KOMPETEN METHYL BROMIDA
STANDAR BADAN KARANTINA PERTANIAN

TERIMA KASIH
(THANK YOU)

附件10、Australian Experience on the Implementation of Vessel Compliance Scheme (VCS)

Australian Government
Department of Agriculture and Water Resources

Maritime Arrivals Reporting System (MARS)

Vessel Compliance Scheme

Quarantine Regulators Meeting
Indonesia

Dean Merrilees
Assistant Secretary, Compliance Controls Branch

8 May 2018

Risk and Operational Context

Protecting Australian agriculture and environment

- Maritime vessels, its cargo and crew are vectors for a number of invasive human, plant, animal and marine species.
- Over 18,000 international vessels arrive at over 90 ports around Australia with an anticipated 4% increase each year

- Strong biosecurity laws protect Australia's $32 billion agriculture industry and our unique environment.
- A system was required to ensure compliance while remaining flexible for future challenges

Risk-Based Intervention Model: The Vessel Compliance Scheme (VCS)

- Primarily aimed at promoting **informed compliance**
- Vessel master and crew are better informed of
  - Australia's biosecurity requirements
  - what constitutes a breach and the consequences of it
  - what to expect on arrival to enable better preparation en-route to comply.
- The VCS uses a demerit points system
- For each negative finding during an inspection, demerit points are applied.
- Consistently compliant vessels are rewarded with fewer inspections on future voyages to Australia.

Principles/features of the VCS

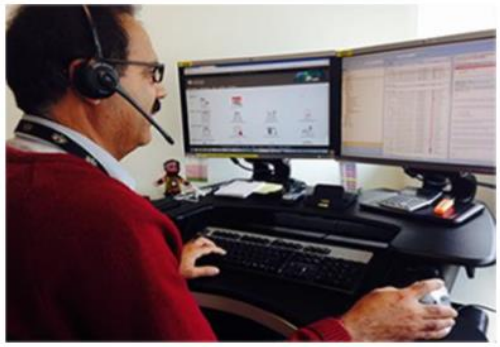
- Uses an intelligence-based approach to allocate our inspectors to the highest risk vessels
- When a vessel passes three inspections in a 12 month period it qualifies for the VCS.
- Once on the VCS, two in five voyages to Australia are inspected with the remainder assessed on their documentation.
- The department's website details what we look for when we inspect the vessel.

Department Publications

- Vessel Compliance Scheme for Commercial Maritime Vessels Poster
- Australia's Biosecurity Checklist for Commercial Vessels (published in English, Chinese, Greek, Japanese, Korean, Russian, Tagalog and Hindi.
- E-Learning Package for Vessel operators and shipping agents
- Quick Reference Guides on how MARS and the VCS works

Achievements to date

- Full implementation completed in December 2016.
- Improved consistency and transparency in decision-making.
- Improved clarity on most common or systemic non-compliance issues to facilitate targeted information and education campaigns.



- Facilitates 'informed' compliance – 16% more vessels have qualified for VCS since implementation.

The future of VCS

- Continued refinement of the scheme
- Work with vessel operators to address recurring issues
- Broader education campaigns for shipping industry
- Expansion into other pathways – aircraft, cargo

For more information

- Visit http://www.agriculture.gov.au/biosecurity/avm/vessels
- Email MARS.Administrator@agriculture.gov.au

附件11、New Zealand Experience on Managing Biosecurity Risk on E-Commerce

Australian Government
Department of Immigration and Border Protection

Australian Government
Department of Agriculture and Water Resources

Ministry for Primary Industries
Manatū Ahu Matua

NEW ZEALAND CUSTOMS SERVICE
TE MANA ĀRAI O AOTEAROA

AUSTRALIA POST

New Zealand Post

AU – NZ eCommerce international mail Green Lane Trial

New Zealand Customs Service
Australian Department of Immigration and Border Protection
November 2017

Why?

- To test processes to streamline the movement of low-risk goods through the international mail stream between Australia and New Zealand.
  - This includes testing use of pre-arrival mail item data for risk assessment and targeting of mail.
- Announced by the Prime Ministers of Australia and New Zealand on 17 February 2017.

How?

- Agree objectives and success criteria
- Select eSellers
- Develop simple border profiles
- Test ITMATT, CUSITM and CUSRSP message formats
- Test new processes in the OE

Once the mail arrives in the Office of Exchange:

Video

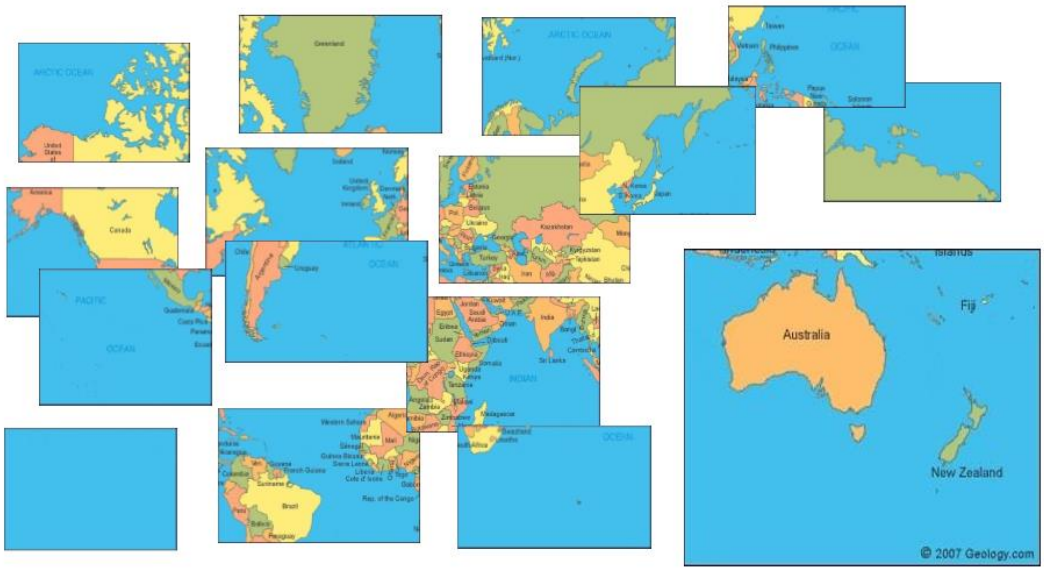
- VIEW LINK - GREEN LANE WHOLE OF GOV-MP4.mp4
- DOWNLOAD LINK - https://publish.viostream.com/player/download/w65iqkb6e45s5

Results

No	Criteria	Measure	Trial outcome
1	Electronic mail data is exchanged between NZ Post and Australia Post	Met / Not met Percentage of available data exchanged (100%)	Met
2	Electronic mail data is received by border agencies	Met / Not met Percentage of available data received (100%)	Met 100% of available data received Mail items with data: AU to NZ: 99.3% NZ to AU: 89.8%
3	Border agencies run simple risk profiles or artificial profiles using electronic mail data	Met / Not met	Met
4	Response (held/clear) sent by border agencies back to postal administration	Met / Not met Percentage of messaging generated (100%)	Met AU – NZ – 100% NZ to AU – 100%
5	Selected mail items identified by postal administrations and presented for border agency inspection	Percentage of selected mail items identified (expected standard: 100%)	Met AU – NZ – 100% NZ to AU – 100%
6	Items stopped for no data	Percentage of items without data held for manual clearance (expected standard: 100%)	Met AU – NZ – 3 items without data AU to NZ – 100% of items held for manual clearance NZ to AU – 25 items without data NZ to AU - 100% of items held for manual clearance

Future

"Regional jigsaw approach"



附件12、The Speed Box, an Innovative Application Device for Alumunium Phosphide Fumigation

Detia Degesch Speedbox

The perfect solution for container and stack fumigations with Degesch Plates at low temperatures

Development of the Speedbox – What was behind

- ❒ in some cases continuous degassing is not totally ensured in temperate climates
- ❒ in case of short exposure times on cooler days in winter season the complete degassing of phosphide products is not always ensured

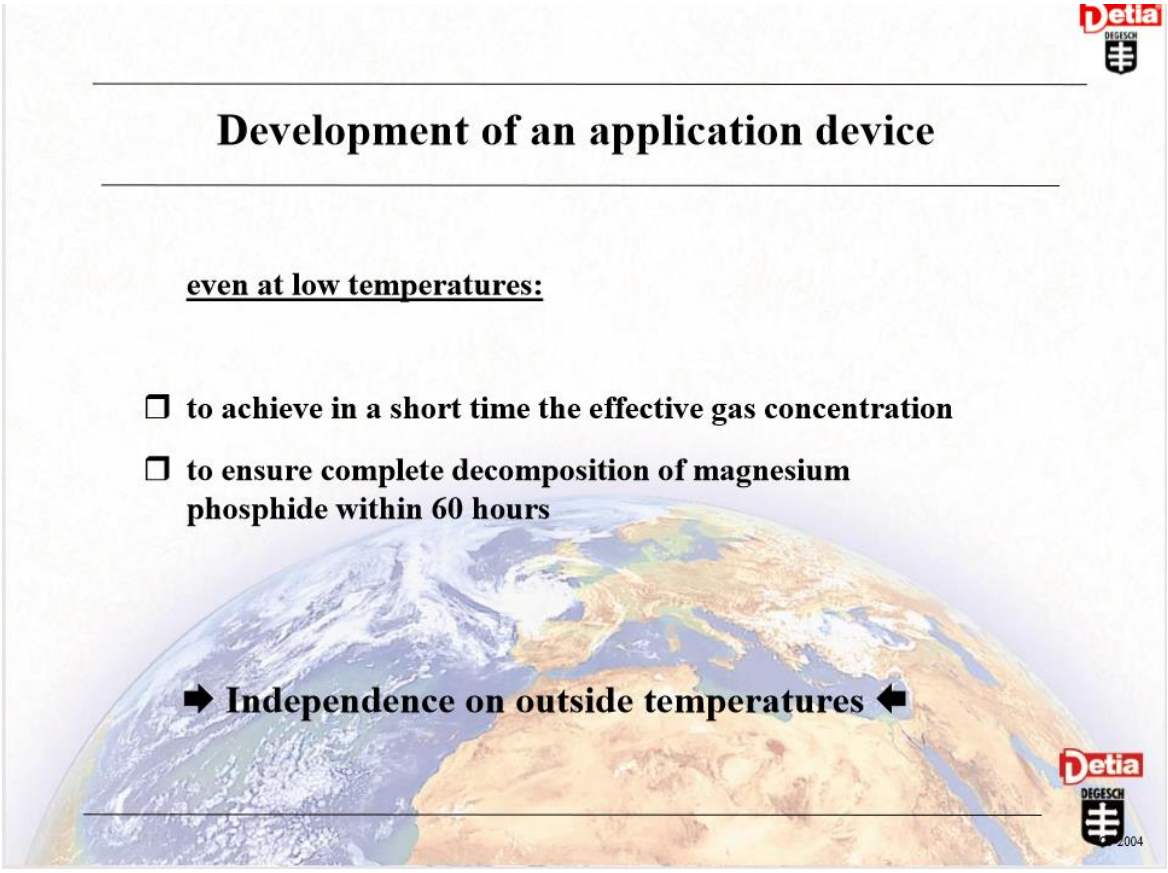
➔ Dependence on temperature

Development of an application device

even at low temperatures:

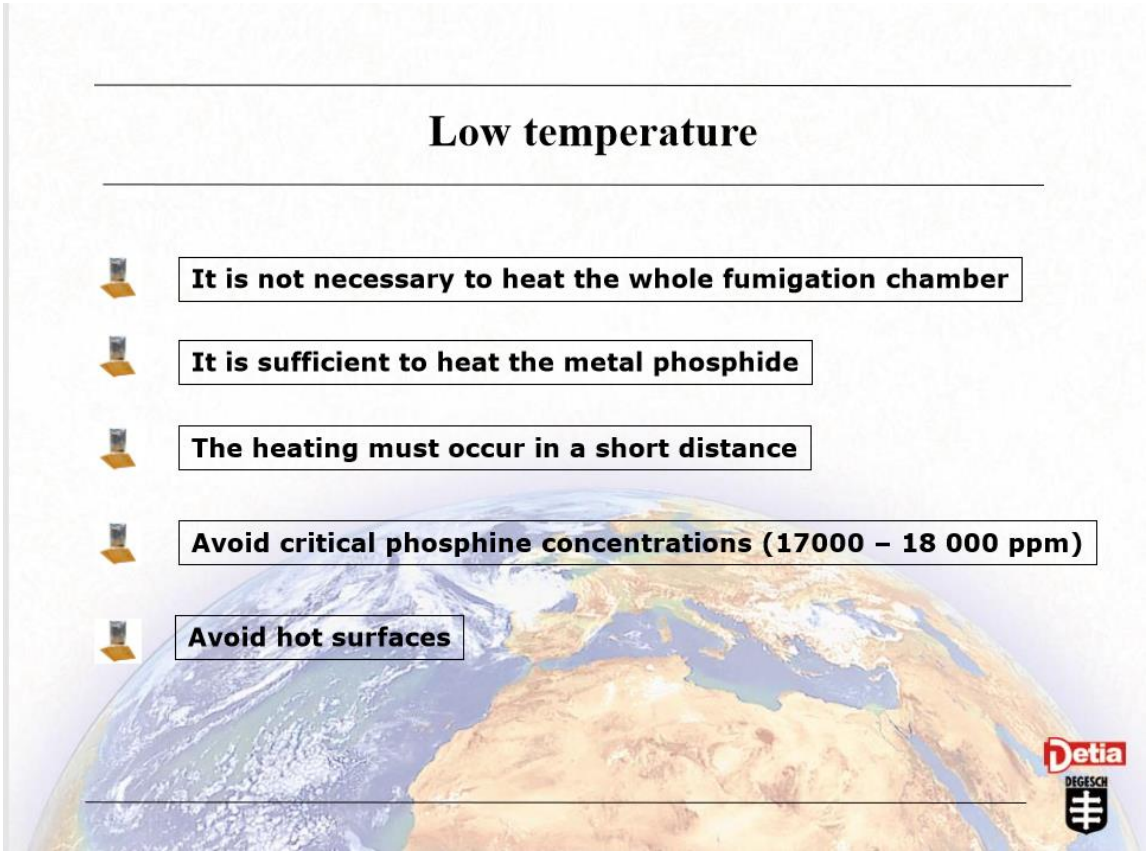
- ❒ to achieve in a short time the effective gas concentration
- ❒ to ensure complete decomposition of magnesium phosphide within 60 hours

➡ **Independence on outside temperatures** ⬅

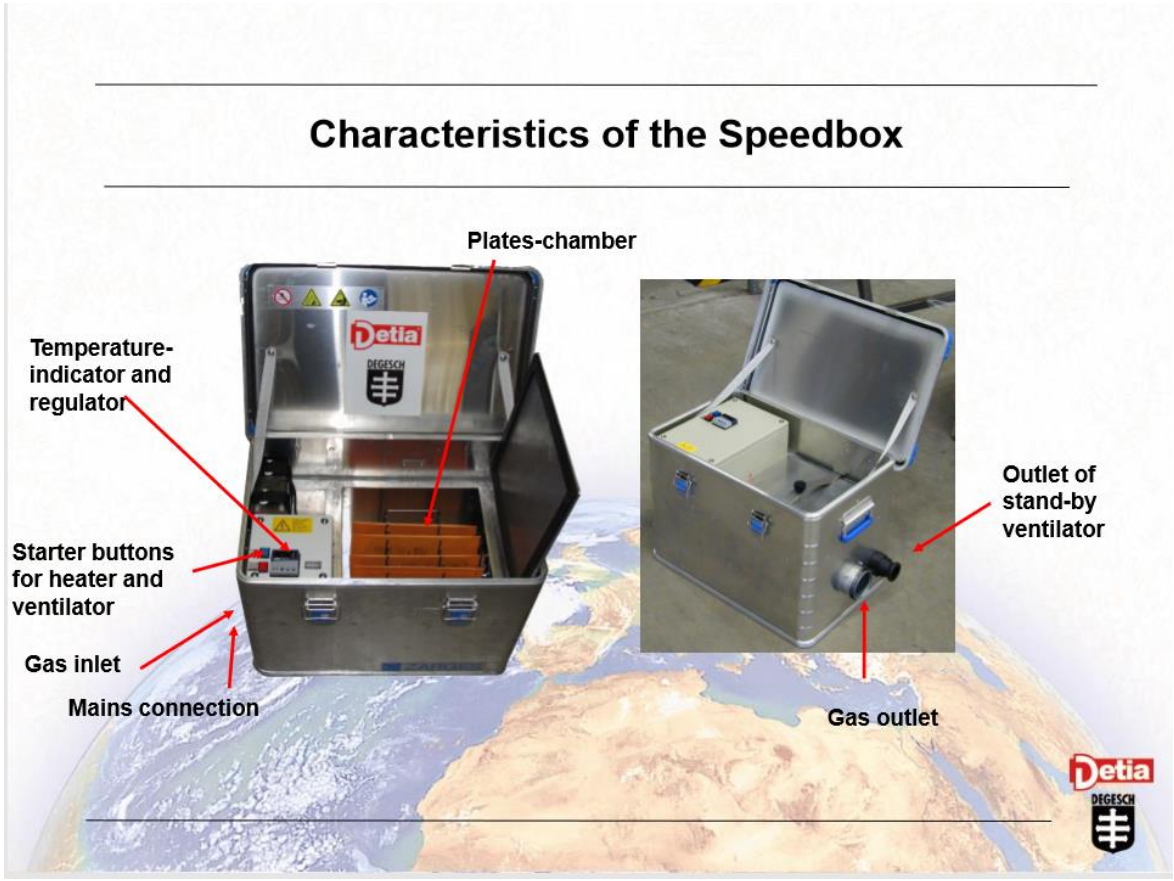


Low temperature

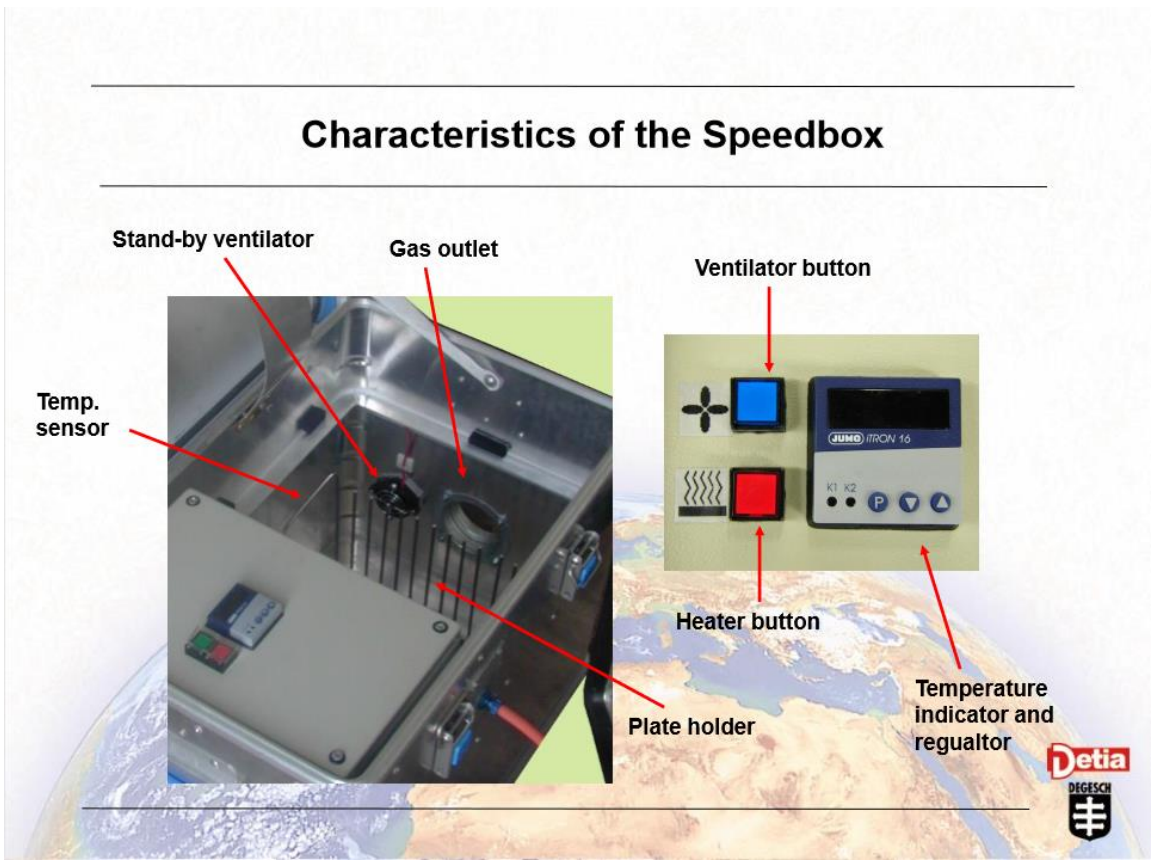
- It is not necessary to heat the whole fumigation chamber
- It is sufficient to heat the metal phosphide
- The heating must occur in a short distance
- Avoid critical phosphine concentrations (17000 – 18 000 ppm)
- Avoid hot surfaces



Characteristics of the Speedbox

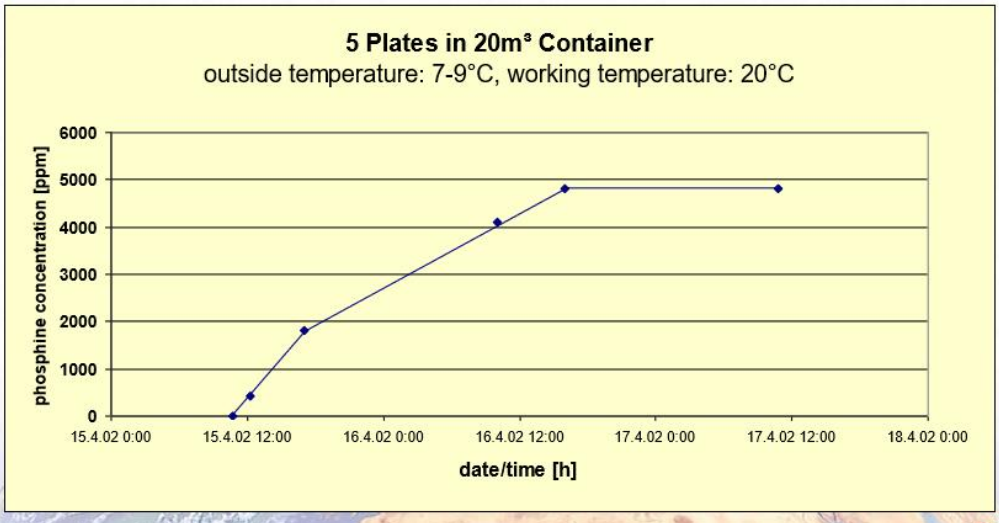


Characteristics of the Speedbox

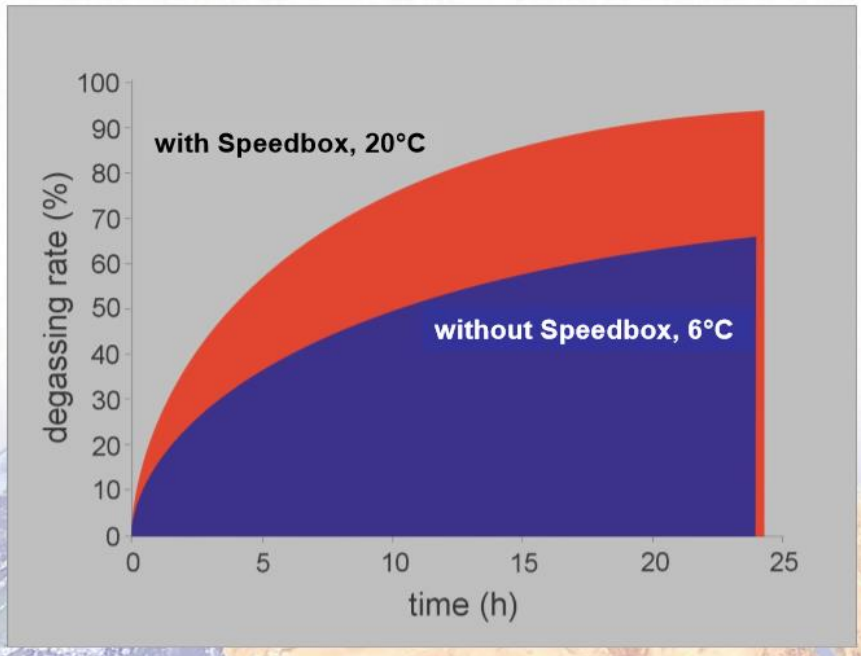


How does it work

Fumigation using the Detia Degesch Speedbox



Degassing rate of Degesch plates using the Speedbox



Fields of application

- at low temperatures
- Container fumigations
- Stack fumigation
- Space fumigation

Adapters and fittings





Features

- Watertight aluminium box
- Thermostat: adjustable from 15 – 35°C
- Connection for flexible pipe leading to the container
- Connection for flexible pipe leading from the container
- Temperature measure/control
- Thermostat (inside)
- Holder for 12 Plates
- Main ventilator and stand-by ventilator

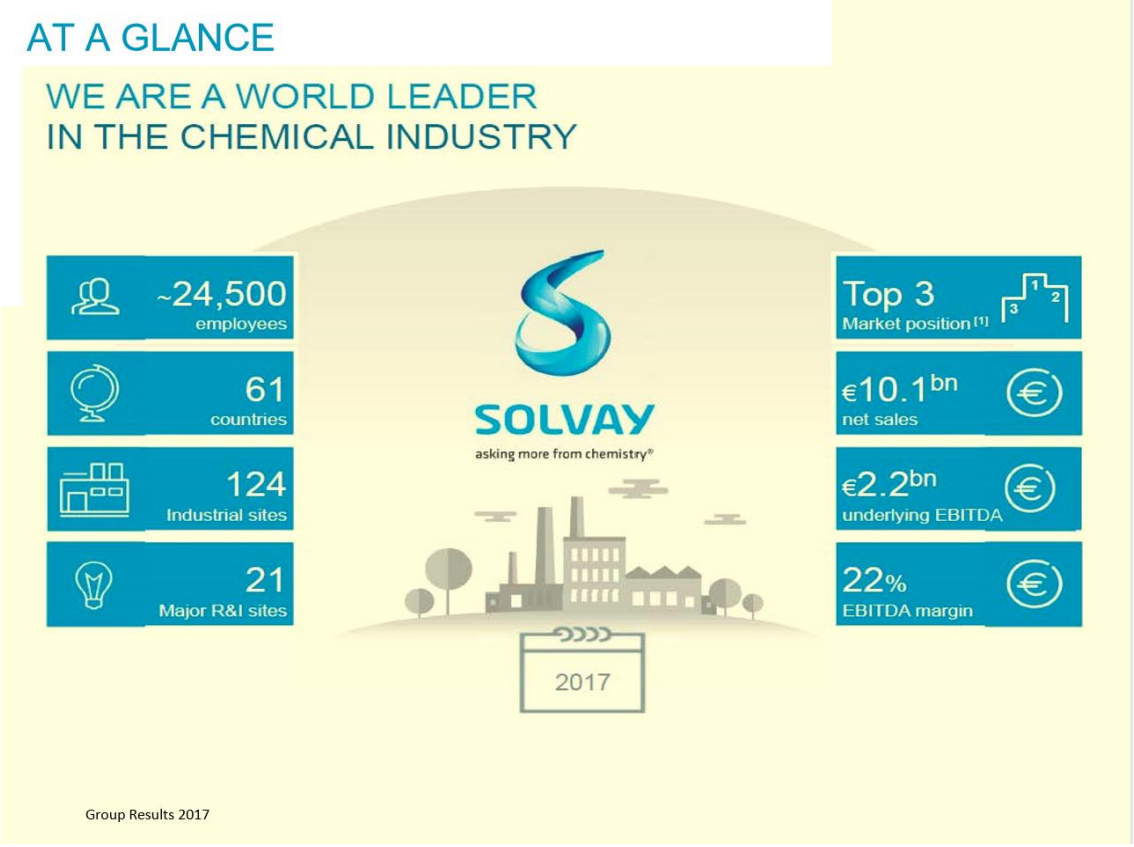
Specification

- Weight: 25 kg
- Measurements: 750 x 400 x 410 mm
- Voltage: 230 V, on request also 110 V possible
- Output: max. 900 W
- Output volume: max. 140 m^3 / h.

Advantages

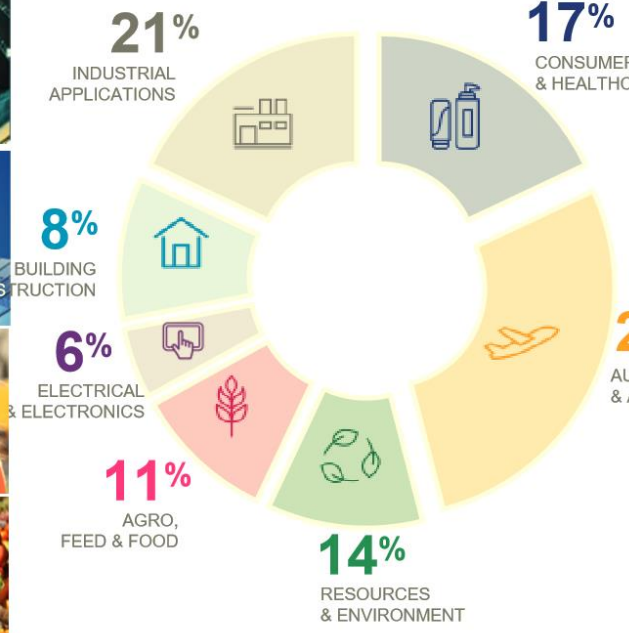
- Continuous degassing of the Plates
- Quicker gas production
- Faster achievement of effective gas concentration
- Reduced degassing time
- “Good” fumigation practice even at lower temperatures
- Complete decomposition of the product

附件13、Solvay Cylinderized Phosphine Fumigants for Quarantine and Pre-shipment Application of Selected Food and Non-Food Commodities



OUR MARKETS
Diversified Specialty Solutions

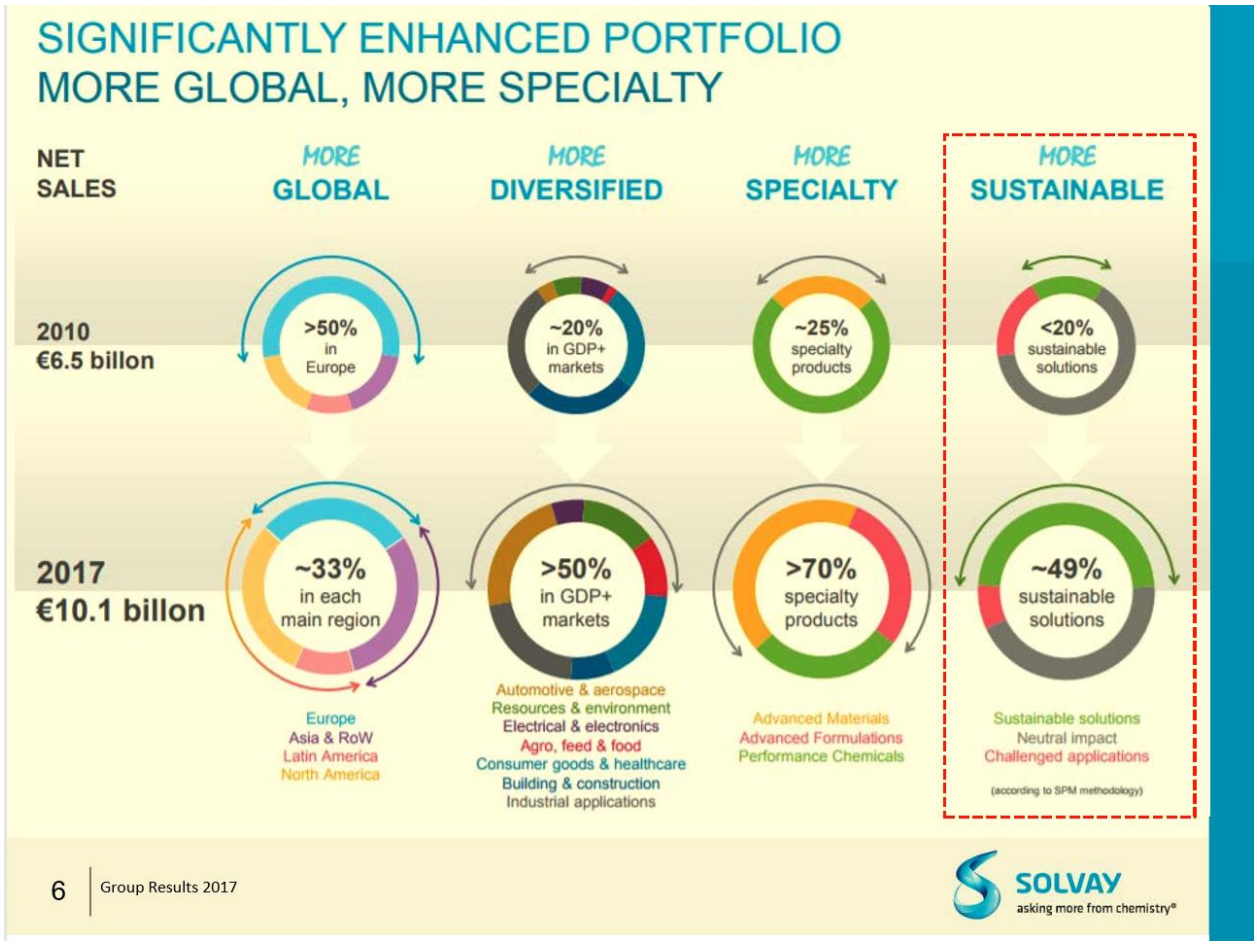




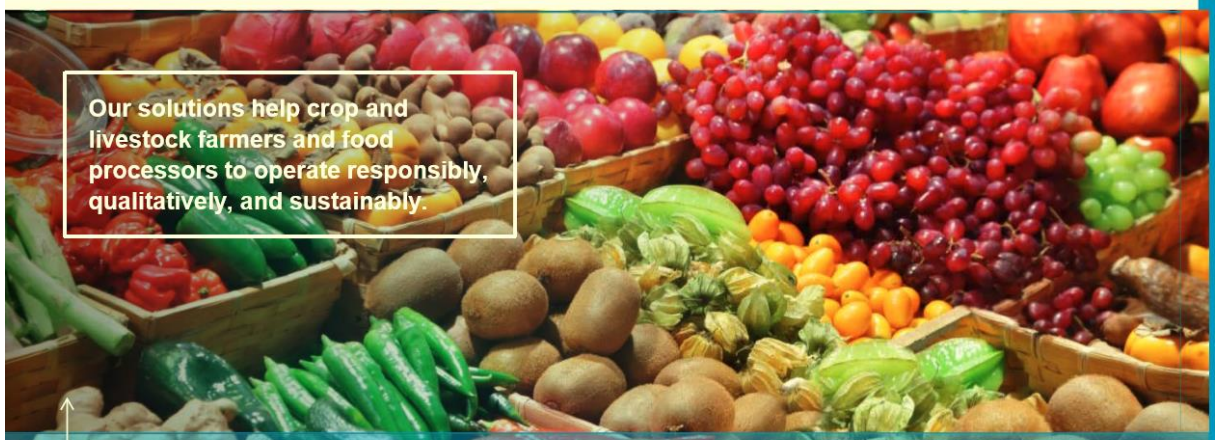
SOLVAY Way
doing business, being responsible


SOLVAY OBJECTIVES BY 2025
Our sustainability commitments aligned with the SDGs
5 SUSTAINABILITY OBJECTIVES BY 2025
THE GLOBAL GOALS For Sustainable Development
SOLVAY Way doing business, being responsible
SOLVAY
Contribute to Society
Innovate Sustainable solutions
Lightness
Sustainable energy
Ecofriendly materials
Air and water care
Smart and efficient processes
Act Responsibly
Operating responsibly
Empowering people
SOCIETAL ACTIONS
X2
Employees involved in societal actions
4 QUALITY EDUCATION
17 PARTNERSHIPS FOR THE GOALS
SPM
50%
Share of sustainable solutions in the Group portfolio
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
PEOPLE ENGAGEMENT
80%
Employee engagement index
GHG
-40%
Reduction of GHG intensity
SAFETY
-50%
of occupational accidents with MTAR target < 0.50
8 DECENT WORK AND ECONOMIC GROWTH
13 CLIMATE ACTION
7 AFFORDABLE AND CLEAN ENERGY
3 GOOD HEALTH AND WELL-BEING
5 Sustainability
SOLVAY asking more from chemistry®


SIGNIFICANTLY ENHANCED PORTFOLIO
MORE GLOBAL, MORE SPECIALTY
NET SALES
MORE GLOBAL
MORE DIVERSIFIED
MORE SPECIALTY
MORE SUSTAINABLE
2010
€6.5 billon
>50% in Europe
~20% in GDP+ markets
~25% specialty products
<20% sustainable solutions
2017
€10.1 billon
~33% in each main region
Europe
Asia & RoW
Latin America
North America
>50% in GDP+ markets
Automotive & aerospace
Resources & environment
Electrical & electronics
Agro, feed & food
Consumer goods & healthcare
Building & construction
Industrial applications
>70% specialty products
Advanced Materials
Advanced Formulations
Performance Chemicals
~49% sustainable solutions
Sustainable solutions
Neutral impact
Challenged applications
(according to SPM methodology)
6 Group Results 2017
SOLVAY asking more from chemistry®

AGRO, FEED AND FOOD

Sustainable living, environmental protection



AGRICULTURE

Environment-respecting formulations, protect crops and improve performance (AgRHO™, PROCrop™).

FEED

Silica, hydrogen peroxide, and sodium bicarbonate-based solutions meet the quality, food safety and productivity requirements of this market (Bicar® Z, Paramove® solution).

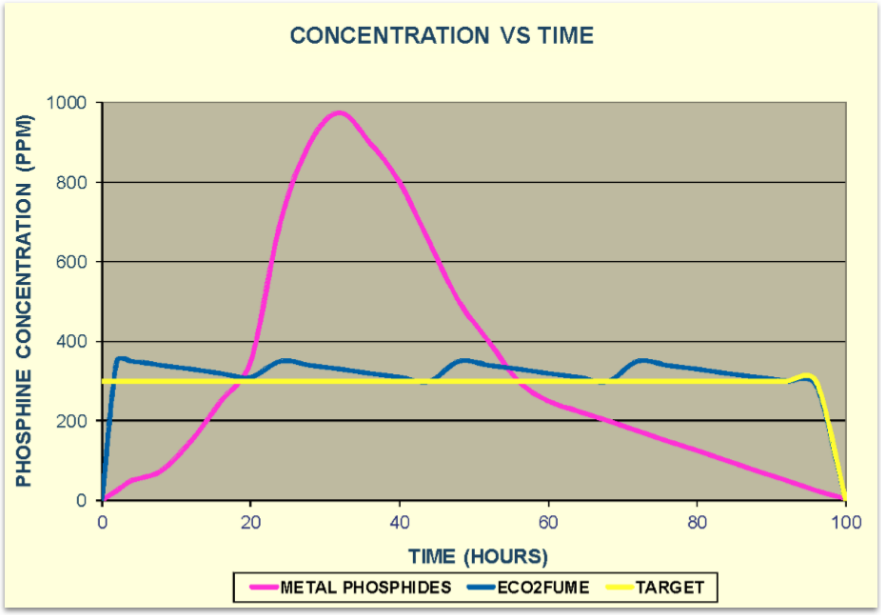
FOOD

Flavors and polymers contribute to safer and healthier food (Vanifolia™, Solvera® PFPE).

CYLINDERISED PHOSPHINE IS AN EFFICIENT AND SAFE FUMIGANT

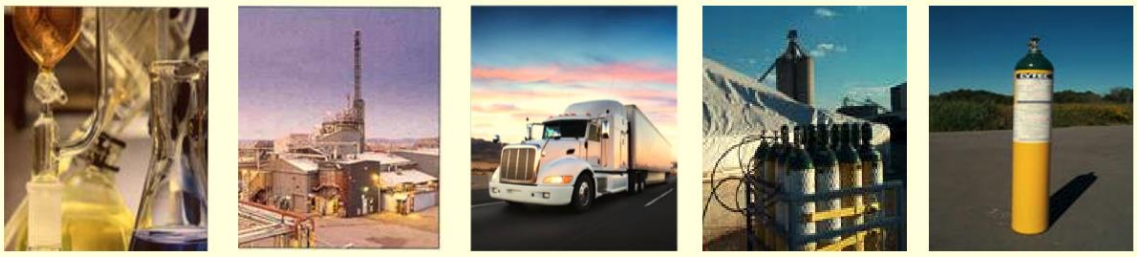
- **$ECO_2FUME^®$ (non-flammable mixture 2% phosphine + 98% CO_2 by weight)**
- **$VAPORPH_3OS^®$ (99.3% phosphine by weight)**
- **Cylinderised Phosphine superior to traditional metal phosphides tablets and pellets (aluminum phosphide, AlP and magnesium phosphide, MgP)**
- **Dispensed quickly and accurately to achieve uniform gas distribution inside the fumigation structure, eradicating pests consistently and fast**
- **Non-flammable property of $ECO_2FUME^®$ and $VAPORPH_3OS^®$ with approved blending equipment safe while in use or in storage**
- **Cylinderised Phosphine takes much less time to aerate and remove the residue below the maximum residue limit from fumigated commodities as compared to Methyl Bromide**
- **Cylinderised Phosphine gas form not subjected to costly disposal of unspent AlP and MgP residue associated with metal phosphides tablets which contaminate fumigated commodities, posing health hazard and ignition risk**
- **More than 15 years of track record of safe use without serious injury to humans, animals or damage to fumigation structures**

EFFICIENCY COMPARISON WITH METAL PHOSPHIDE



SOLVAY asking more from chemistry®

RESPONSIBLE CARE AND PRODUCT STEWARDSHIP



Inception **Production** **Transportation** **Use** **Disposal**

- **Solvay implements Responsible Care initiatives and practices for all its businesses: responsible and ethical management of the health, safety and environmental aspects of our products from its inception through production to its ultimate use and disposal**
- **Product Stewardship trainings are conducted with Cylinderised Phosphine customers as standard practice, to ensure safe and effective use of our products. Essential requirement prior to shipping product.**

SOLVAY asking more from chemistry®

PHOSPHINE FUMIGATION PROTOCOLS FOR QPS

Commodity	Plant Pest Type	Phosphine Conc. (Min.)	Exposure Time	Temperature	Reference
Pineapple	Purple scale, Citrus mealy bug	1400 ppm	24 hours	5 °C or higher	NPQS Korea 2015
Citrus	Queensland fruit fly (Bactrocera tyroni)	1400 ppm	48 hours	23 – 25°C	Williams 2000
Citrus	Citrus red scale	1500 ppm	48 hours	5°C	USDA ARS 2014
Mango	Fruit fly	1400 ppm	24 hours	26 - 33°C	NPQS Sri Lanka 2017
Bitter Gourd	Melon fly	1400 ppm	24 hours	26 - 33°C	NPQS Sri Lanka 2017
Cut Flowers (chrysanthemum, rose, lily)	Western flower thrips, two spotted spider mites, cotton aphids	1400 ppm	24 hours	8°C or higher	NPQS Korea 2015
Dracaena house plants	Purple scale, aphids, white fly, scales	1400 ppm	24 hours	15 °C or higher	NPQS Korea 2015
Mushrooms	Lycoriella mali (sciacarid fly)	1400 ppm	24 hours	5 °C or higher	NPQS Korea 2015
Timber pine Pine Nut pine	Pine weevil, white ant, Bursaphelenchus xylophilus, Monochamus alternatus, Monochamus saltuarius (nematodes)	2800 ppm	5 days	5 °C or higher	NPQS Korea 2015
Pineapple	Planococcus minor (mealy bug)	200 ppm	7 hours	26 – 30 °C	BIOTROP 2012
Mangosteen	Planococcus minor	200 ppm	7 hours	26 – 30 °C	BIOTROP 2012
Orchids	Planococcus minor	200 ppm	7 hours	26 – 30 °C	BIOTROP 2012
Dried Fruits	Ephestia Cautella Plodia Interpunctella	1000 ppm	24 hours	20 - 27°C	Ankara Univ. 2013
Dates	Ephestia Cautella Red flour beetle Saw toothed grain beetle	700 ppm 1000 ppm 1500 ppm	72 hours 48 hours 24 hours	30°C or higher	ARC Egypt 2013
Dried Distillers Grain with Solubles (DDGS)	Red flour beetle	750 ppm 750 ppm 750 ppm	3 days 4 days 5 days	>20°C 15 - 20°C 10 - 15°C	USDA ARS 2014
Export Logs	Longhorn beetle	3500 ppm	5 days	>20°C	Zhang et al 2007

SOLVAY asking more from chemistry®

PHOSPHINE FUMIGATION EXTENDED USES: QUARANTINE PRE SHIPMENT APPLICATION (QPS)

- **ECO_2FUME® and $VAPORPH_3OS$® are recognized as efficient, safe and residue free fumigant for control of phosphine resistant insects on grains and oilseeds, insect pests in produce, buildings, chicken sheds (new application), cut flowers…**
- **Approved in a growing list of countries for Quarantine and Pre-Shipment (QPS) application, to treat various commodities, food and non-food:**

- South Korea: ECO2FUME® approved replacement to methyl bromide for QPS treatment of cut flowers, nursery trees, pineapple, banana, pine wood, root, leafy and stem vegetables, rice grain and seeds.
- Indonesia: ECO2FUME® approved as a primary fumigant for QPS treatment of rice, coffee, cacao, pineapple, mangosteen and tobacco.
- PNG, Fiji: ECO2FUME® approved as replacement to methyl bromide for QPS treatment of imported bulk rice, wheat and stock feeds and other bulk commodities as well as exported coffee beans.
- Uruguay: VAPORPH3OS® approved for QPS and in-transit fumigation of exported logs to China.
- New Zealand: VAPORPH3OS® for logs export under review by Ministry of Primary Industries
- US citrus exports to Australia and S Korea: VAPORPH3OS® approved in systems approach
- Turkey: ECO2FUME® approved as methyl bromide replacement for QPS of exported dried fruits.
- Chile: VAPORPH3OS® approved for QPS treatment of selected exported fruits and vegetables to the US, Japan and Mexico and other destinations
- UAE, Oman and Egypt: ECO2FUME® approved for QPS treatment of exported dates.
- Sri Lanka: ECO2FUME® approved for QPS treatment of mangoes, cucurbits and Ceylon tea.
- Vietnam: ECO2FUME® and VAPORPH3OS® approved for DDGS grains exported from US
- **Australia: ECO2FUME® and VAPORPH3OS® under approval process for Dark Beetle elimination for chicken sheds: would be a world-first innovation**

SOLVAY asking more from chemistry®

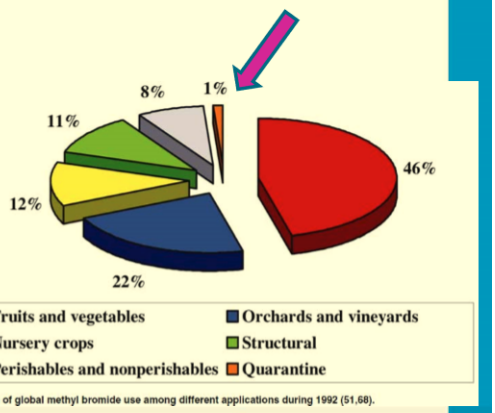
ODP METHYL BROMIDE REMAINS COMMONLY USED

- **Methyl Bromide is an efficient fumigant but as an Ozone Depletion Potential material it was to be phased out following the Montreal Protocol.**
- **Besides its ODP properties, Methyl Bromide is a toxic material which poses other risks and harmful effects, in particular occupational neurologic effects upon prolonged exposure for fumigation employees**
  https://www.epa.gov/sites/production/files/2016-09/documents/methyl-bromide.pdf
- **Methyl Bromide phase out was effective except for Critical Use Exemptions with no suitable alternative such as QPS. CUE status renewed on a yearly basis**

Fact : Methyl Bromide for QPS application was insignificant when the Montreal Protocol was implemented, but grew since then with CUE, unnoticed, **thereby extending environmental and climate change impact:**

MT/year	95~2000 yearly avg	2010~16 yearly avg	%
AU	348	645	85%
NZ	64	521	716%
CN	477	1,118	134%
IN	229	591	158%
JP	1,920	536	-72%
KR	838	504	-40%
ID	174	232	33%
MY	63	135	113%
TH	254	251	-1%
VN	320	839	162%
Asia	4,418	5,175	17%

DATA: UNEP



Distribution of global methyl bromide use among different applications during 1992 (51,68).

SOLVAY asking more from chemistry®

PROPOSITION TO ALLOW CYLINDERISED PHOSPHINE AS A VALID ALTERNATIVE FOR ODP METHYL BROMIDE

- **Fact: Cylinderised phosphine constitutes a credible solution for Quarantine and Pre-Shipment for selected commodities.** It's slower lethal effect compared to Methyl Bromide is compensated by MB longer aeration time. Besides, Cylinderised Phosphine doesn't have the inconsistency and drawbacks of common metal Phosphide tablets
- Along the years since the Methyl Bromide Phase out was initiated for all other applications, other fumigants or pest controlling methods were successfully applied **following many efficacy studies and healthy innovation**

  ➔ given the opportunity, without CUE the same would benefit to QPS

- **Authorities to reconsider the undue and harmful protected status of Methyl Bromide**
  ➔ to be able to choose between various solutions should be made possible

SOLVAY asking more from chemistry®

DJSI WORLD 2017
Solvay listed in the DJSI World

Dow Jones Sustainability Indexes

The DJSI World is the first global index to measure leading sustainability-driven companies. It is a key reference for corporate sustainability.

Solvay was in particular rewarded for the robustness of both **its materiality analysis** and its **Sustainable Portfolio Management** methodology which measures the full impact of the Group's business decisions.

Solvay's 2017 score: 81, stable
Percentile ranking: 87, vs 81 in 2016; rank: 11th

Main strengths noted:
- Materiality analysis
- Impact measurement and valuation through SPM
- Human rights due diligence
- Innovation management

SPM SUSTAINABLE PORTFOLIO MANAGEMENT

MEMBER OF
Dow Jones Sustainability Indices
In Collaboration with RobecoSAM

SOLVAY asking more from chemistry®

www.solvay.com

SOLVAY asking more from chemistry®

附件14、The EDN (ethanedinitrile), A Newly Fumigant Potential for Phytosanitary treatment

Overview

- Draslovka and Draslovka Services Introduction
- What is EDN™?
- EDN™ in the environment
- EDN™ advantages for post harvest application
- Registration
- Mode of action
- EDN™ efficacy against timber target pests
- ISPM 15
- EDN™ for soil fumigation
- EDN™ commercial application
- Further information

EDN

Draslovka

Draslovka - Introduction

The Draslovka Group is made up of a number of business units:

Draslovka is our key business unit, responsible for developing and optimizing production, sales & marketing and research & development. A technology leader in CN based chemicals, the company is incorporated in Prague, Czech Republic and acts as a production, logistics and technological hub, for the Draslovka Group's operations.

Draslovka Services are an expanding group of vertically integrated and fully incorporated quarantine, agricultural crop protection, and biosecurity consultancies, providing global trial support, commercial application and product development consulting, as well as registration and business support, for suppliers, distributors and customers.

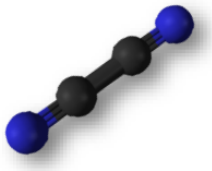
Draslovka Services Pty. Ltd. directly fills a gap in industry between the manufacturer and the end-user, enabling a direct link to ensure seamless custom application development and field trial support

Draslovka Services Pty Ltd. based in Melbourne, Australia to ensure real time support to the Asia Pacific Region
Draslovka Services RSA Ltd. based in Cape Town, South Africa
Draslovka Services NZ Ltd. based in Auckland, New Zealand
Draslovka Services India Ltd. based in Chennai, India (pending)

EDN Draslovka

What is EDN™ (Ethanedinitrile)?

Chemical Name	Ethanedinitrile, Cyanogen, Oxalonitrile
Chemical Formula	C_2N_2
Trade Name	EDN™ Fumigas
Structural Formula	N ≡ C – C ≡ N
Chemical Class	Class 2.3 (Toxic)
Appearance	Colourless gas
Boiling point	-21° C
Volatility	100 % volatile
Exposure Value	National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Limit (REL): 10 ppm, 20 mg/m³ TWA
Efficacy	Broad spectrum fumigant highly effective against insect pests, nematodes, pathogens and weeds



EDN Draslovka

What is EDN™ (Ethanedinitrile)?

EDN is not new molecule. It was discovered in 1815 but was not manufactured on a large scale until the late nineteenth century.

- EDN was patented in 1960 for use in the nitrate fertiliser industry
- EDN is used in the production of nitrocellulose
- In medicine as an active ingredient in wart remover
- In molecular biology to help detect gene sequences
- In cosmetics industry in nail polish

EDN was identified as a possible fumigant in 1996 and was patented by CSIRO, an Australian government research organisation. The patent was later transferred to Draslovka.

Scientific research have shown that EDN can be used as a soil fumigant to kill soil borne pathogens, soil borne insects, nematodes and weeds prior to planting vegetable and fruit crops.

EDN is also very effective on insect pests and pathogens of forest products.

Based on these characteristics, EDN is considered as a suitable replacement for ozone depleting methyl bromide.

EDN Draslovka

EDN™ in the environment

- EDN is not a ozone depleting or a green house gas
- EDN doesn't accumulate in human, animals, plants or as a residue in soil.
- EDN degrades very rapidly in air, soil and water
- Half life in air 100 days (light) to 150 days (dark)
- Half life in soil and water few minutes to days depending upon pH and temperature
- In the soil it breaks down to ammonia and nitrates which is released into the environment or consumed by the plants

EDN Draslovka

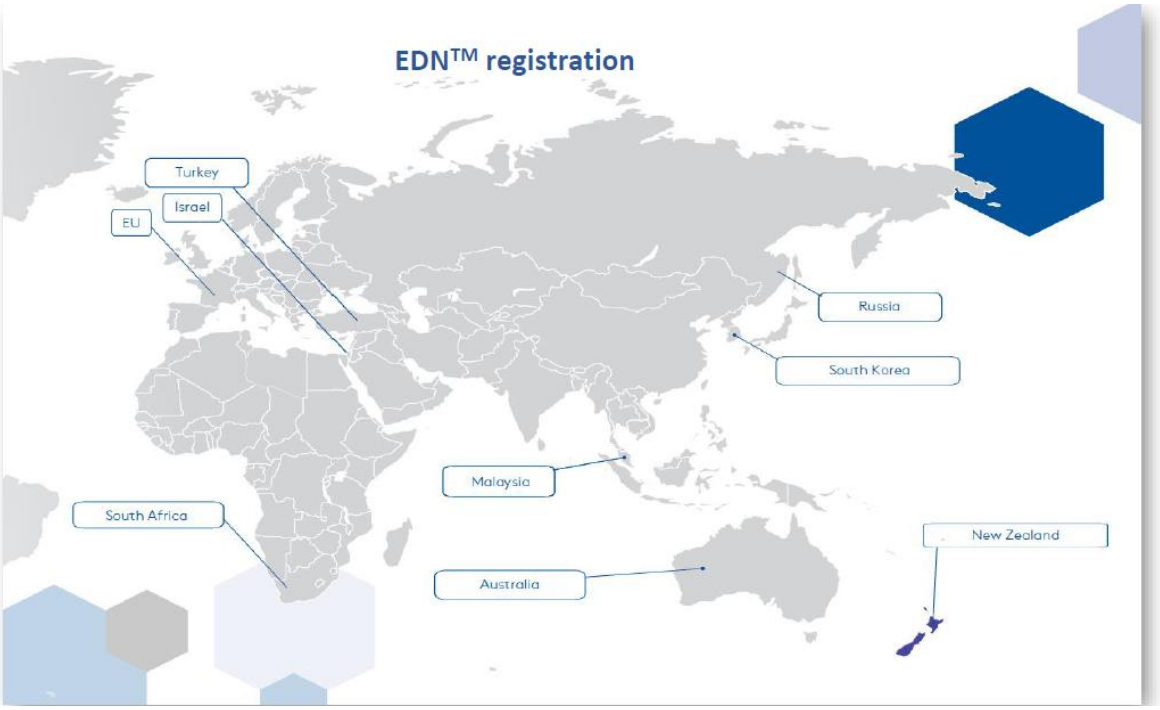
EDN™ Advantages for Postharvest Application

Properties	EDN™	Methyl Bromide	EDN™ Advantages
Boiling point	-21 ° C	3.6 ° C	EDN can be applied as a gas and is effective against target pests at very low temperatures
Vapour Pressure	515 kPa (21°C)	214 kPa (21°C)	EDN has a high vapour pressure hence it will penetrate quickly and distribute easier than methyl bromide.
Density in Air	2.2	3.27	Both fumigants are heavier than air but EDN is lighter than methyl bromide hence ventilation can be quicker than methyl bromide
Specific Volume (@ 25°C and 1 atm)	462L/kg	256L/kg	This is the comparative volume of each product – EDN creates much more gas per kg.
Molecular weight	52.04	94.94	EDN has a low molecular weight which means it can move quickly from areas of high concentration to low concentration and achieve equilibrium faster.
Exposure limits	10 ppm	5 ppm	EDN has a twice higher TLV exposure limit than methyl bromide
Van der Waals radii	160 pm	185 pm	Smaller molecule hence greater penetration into timber and logs
End point concentration after fumigation	1% of the initial dose rate	50% of the initial dose rate	Quick ventilation, very low level released into the environment

EDN

Draslovka

EDN™ registration



EDN™ is approved in Australia

KEEP OUT OF REACH OF CHILDREN

PLEASE READ ALL SAFETY DIRECTIONS BEFORE OPENING OR USING

EDN™ FUMIGAS

Active Substance: 1000g/kg Ethanedinitrile

NET CONTENTS: 50.0 kg

For the control of pathogens, weeds and insects in soil prior to planting crops, and control of insect pests and fungi infesting timber and logs as per the directions for use table

APVMA APPROVAL NUMBER 60096/110486

FOR USE BY LICENSED FUMIGATORS OR APPROVED PERSON ONLY

EMERGENCY INFORMATION	
UN1026	Class 2.3 / 2.1
GAS, N.O.S (Ethanedinitrile)	HAZCHEM CODE 2PE
IN A TRANSPORT EMERGENCY DIAL 000 FOR POLICE OR FIRE BRIGADE	

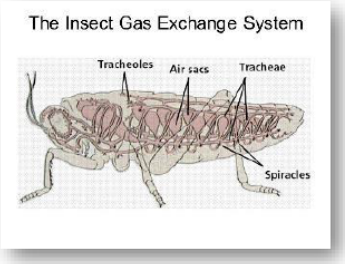
New Zealand Status: EDN™ approval

- New Zealand forest products generate NZD 5bn annually with a total export value of NZD 2bn
- 600 plus tonnes of methyl bromide were used in 2016 and most of this on logs
- Methyl bromide use continue to increase due to growth in logs export
- NZ Environmental Protection Authority reassessed methyl bromide in 2010
- Imposed greater controls including no methyl bromide emissions to the atmosphere beyond 2020
- STIMBR reviewed 15 significant chemicals as possible alternatives
- EDN was identified as a suitable alternative based on efficacy, environmental safety, application method and comparable cost
- EDN application was submitted in Jan 2018 and approval is expected at the end of this year
- Draslovka is working with Plant and Food NZ and STIMBR for generating robust efficacy data
- New Zealand government will deliver efficacy data to trading partners in 2018

EDN Draslovka

EDN™ mode of action to control insects

When insects respire, EDN enters through the spiracle. Once it enters into the insect body it targets cytochrome C oxidase (an enzyme in the mitochondrial respiratory chain which helps the tissue to use oxygen). This results in a reduction in oxygen usage and tissues damage through out the body which leads to death of the insects



EDN Draslovka

Burnt pine longhorn beetle

- NZ Burnt pine longhorn beetle, *Arhopalus ferus* is a quarantine pest of export pine logs and sawn timber by importing countries such as China, India and Australia
- Currently MB or phosphine or debarked is used
- Some countries are specific with MB use however this fumigant release into the environment is restricted beyond 2020 in NZ
- EDN was tested as an alternative to MB treatment
- EDN is highly toxic to Burnt pine longhorn beetle

EDN Draslovka

EDN™ is highly toxic than MB to Burnt pine longhorn beetle

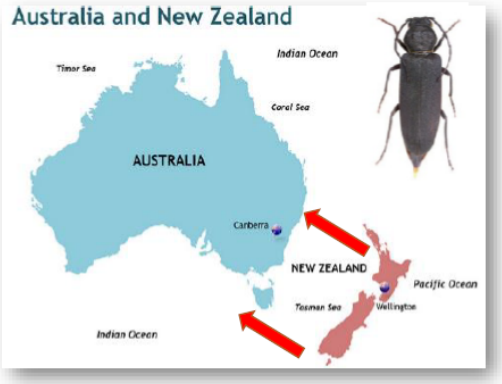
Life stages	Temperature	EDN (g h/m^3)	MB (g h/m^3)	MB/EDN
Egg	10°C	5.1	64.2	**12.58**
Larval	10°C	22.0	90.9	**4.13**
Adult	10°C	19.4	36.0	**1.85**
Egg	20°C	1.5	36.4	**24.26**
Larval	20°C	19.5	55.2	**2.83**
Adult	20°C	16.8	31.8	**1.89**

Najar-Rodriguez *et al.*, (2015) New Zealand Plant Protection

EDN Draslovka

EDN™ Bilateral approval: Australia & NZ

- EDN has been approved as a phytosanitary treatment option for controlling hitchhiking adult *Arhopalus* on wood products for export to Australia
- This was agreed after number of meetings and supporting efficacy data
- First EDN approval as a phytosanitary treatment between Australia & New Zealand
- EDN effective dose rate 25 g/m³ for 3 hours Vs MB dose of 48 g/m³ for 24 h



EDN Draslovka

Golden-haired bark beetle

- NZ Golden-haired bark beetle, *Hylurgus ligniperda* is a quarantine pest of export pine logs by importing countries China and India
- LD_{99} (g/m³) for life stages of *H. ligniperda* in logs

Target life stage	10° C	20° C
	LD_{99}	LD_{99}
Larvae	23.60	9.01
Pupae	54.64	34.69
Adult	10.14	16.03

- Comparison between EDN and MB doses for 24 h treatment to India

Temperature ° C	EDN (g/m³)	MB (g/m³)	MB/EDN
10	55	72	1.30
20	35	48	1.37

Matt *et al.*, (2017) Methyl bromide Alternatives Outreach

EDN Draslovka

European house borer

- European House Borer (EHB) *Hylotrupes bajulus* is native to Europe and it is considered as a quarantine pest because it is a destructive pest of seasoned coniferous timber including pine, fir and spruce used for making roofs, architraves, door frames and timber articles
- If allowed to become established it can cause major structural damage to buildings
- The damage is done by EHB larvae and it is hard to identify and is often only detected after the mature beetle has emerged from the timber to take flight
- Heat or MB is recommended for control
- EDN was tested as an alternative to MB treatment
- EDN is highly toxic to EHB larvae

EDN Draslovka

EDN™ is highly toxic than MB to European house borer

Fumigants	Day 1		Day 4		Mortality
Experiment-1	Dead	Alive	Dead	Alive	(%)
EDN (40 g/m3)	41	0	41	0	100
MB (48 g/m3)	29	0	29	0	100
Experiment-2					
EDN (40 g/m3)	24	0	24	0	100
MB (48 g/m3)	36	2	37	1	97.3

Emery *et al.*, (2014) 11th International Working Conference on Stored Product Protection

EDN Draslovka

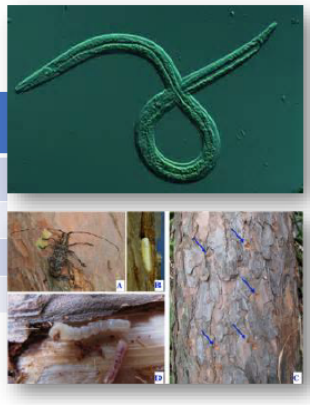
Pine Wood Nematode and Pine sawyer

- PWN *Bursaphelenchus xylophilus* is the causal agent of pine wilt disease and Pine sawyer *Monochamus sp* is the insect vector that spread the nematode
- It is native to North America and spread to Japan, China, Korea, Taiwan and Portugal
- The nematodes are generally thought to be transported in timber used for producing packaging materials
- Many other parts of the world are also at major risk from the disease
- As a result International Standard for Phytosanitary Measures (ISPM) No. 15 for wood packaging material was introduced in 2002 to minimise the risk
- Heat or MB is recommended for control
- EDN was tested as an alternative to MB treatment
- EDN is highly toxic and provided complete control of PWN and its vector

EDN Draslovka

EDN™ efficacy to PWN and its vector Pine sawyer larvae

EDN dose rate	Temperature (° C)	Chamber volume (m³)	Infested pine logs	*Monochamus alternatus* larvae			*Bursaphelenchus xylophilus*		
				Total used	Dead	Mortality (%)	Total used	Dead	Mortality (%)
100	21–33	107	95	801	801	100	1500	1500	100
120	6–12	50	57	563	563	100	2100	2100	100
150	−1–3	108	73	583	583	100	1700	1700	100



Lee *et al.*, (2016) Pest Management Science

EDN Draslovka

Asian Long Horn beetle

- Asian long horn beetle *Anoplophora glabripennis* is native to parts of Asia
- It is considered a serious invasive threat because it attacks and kills many varieties of hardwood trees, such as maple, elm, horse chestnut, ash, birch, poplar, and willow
- The larval stage of the *A. glabripennis* is the most destructive stage for timber and timber products, such as wood packaging
- The potential introduction of *A. glabripennis* is serious threat worldwide, because it can be found in the wood packaging of imported goods from parts of Asian countries

EDN

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EDN™ efficacy to Asian Long Horn beetle

EDN dose rate	Treatment time	Temperature	Mortality
40 g/m3	6 hours	10 °C or above	100%

Ren *et al.*, (2006) Journal of Economic Entomology

EDN

Draslovka

EDN™ is highly toxic than MB for stored product insects

Target Pests	Ct product (mg h/L) required to achieve 100% mortality after 6 hours exposure			Ct product (mg h/L) required to achieve 100% mortality after 24 hours exposure		
	MB	EDN	MB:EDN	MB	EDN	MB:EDN
Cigarette beetle	120	45	**2.66**	124	46	**2.73**
Rice weevil	75	72	**1.04**	80	75	**1.06**
Lesser grain borer	51	44	**1.15**	55	47	**1.17**
Warehouse beetle	90	63	**1.42**	91	65	1.4
Red flour beetle	96	22	**4.36**	92	24	3.83





Ren *et al.*, (2014) CRC Plant biosecurity report

EDN

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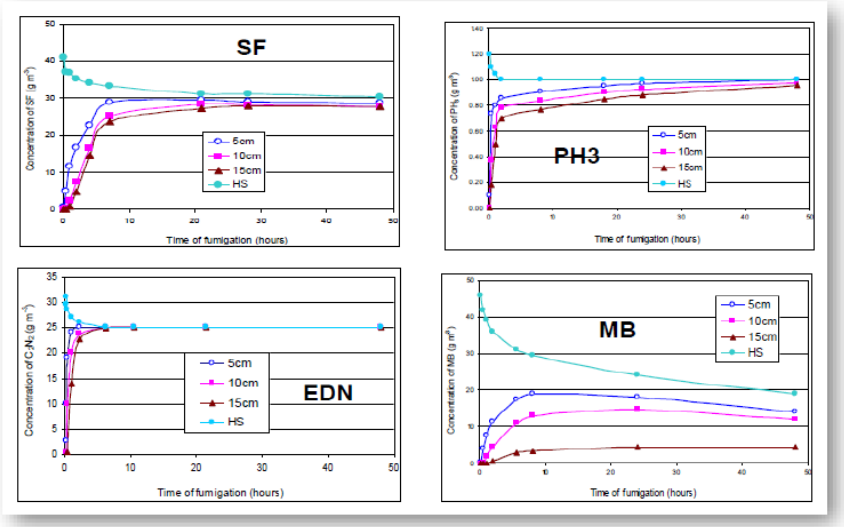
Penetration of EDN™ and other fumigants into timber



Ren *et al.*, (2011) Journal of Stored product Research

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What is ISPM 15?

- **ISPM 15** – is the international standard for regulating the movement of timber packaging and dunnage through international trade and aims to prevent spread of timber pests

Often treatments used in ISPM 15 are accepted through bilateral negotiations for other wood products as well

- **Three treatments are approved under ISPM 15**

1. Conventional heating of the wood within a kiln to a temperature of 56 ˚C for a period of 30 continuous minutes throughout the profile of the wood

2. Dielectric heating (RF, MW) to heat the entire profile of the wood to a temperature of 60 ˚C for a period of 60 seconds

3. Methyl bromide 48 – 64 g/m^3 (10^0 or above) (minimum concentration specified under ISPM 15 must be achieved after 24 hours

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What products does ISPM 15 apply to?


Pallets


Dunnage used for shipment


shipping crate


Shipping crate on wooden box


Wooden spool


Shipping boxes


Stone shipments


Ship borne dunnage

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ISPM 15 treatment plan for new chemical approval

A working draft for approving new chemicals have been developed for ISPM 15 treatment by IPPC technical panel. It specify the required pests and testing method to confirm the efficacy of new treatment from initial screening to the field condition.

Insect pests for initial screening process (a representative of each family is needed)
Bostrychidae (false powder post beetles),
Buprestidae (Jewel beetles),
Cerambycidae (large wood borers) ,
Curculionidae (include bark and ambrosia beetles or weevils)
Siricidae (wood wasps).

Wood pathogens:
Heterobasidion sp. (decay/pathogenic fungus),
Ceratocystis sp. (pathogenic fungus/vascular wilt)

Wood nematode
Bursaphelenchus xylophilus (pine wood nematode).

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ISPM 15 EDN™ protocol

- Draslovka is working with scientist Adnan Uzunovic FPInnovation, Canada that are familiar with the process of testing new treatments and are research provider for wood industry and support science based policy making
- FPInnovation has been part of international collaborative research to provide data to support development and acceptance of several phytosanitary treatments (MW, RF, System approaches and alternative fumigants)
- An appropriate EDN protocol (containing several phases) has been developed by Adnan and discussed with the IPPC's TPPT representative and other researchers in the field at the recent IFRQG meeting 2017 at Rotorua NZ.
- It will continue to be an international collaborative effort that will summarize and package the existing information and include additional complementary tests at USDA-USA, PFR NZ and other labs following the requirements of the Process developed by IPPC

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ISPM 15 treatment plan at FPInnovations

Three types of wood pests

1. Pine wood nematode -*Bursaphelenchus xylophilus*

2. Three fungal pests

   - Root/stem rot *Heterobasidion annosum*,
   - Sudden oak death *Phytophthora ramorum*
   - Oak wilt -*Ceratocystis fagacearum*

3. Insect from Curculionidae family

EDN

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EDN™ for soil fumigation

- Fumigants are applied into the soil before crops are planted. Once they are applied to soil, these fumigant products work by forming gasses that move through the soil to control weeds, soil borne fungal pathogens, nematodes and insects that can cause significant damage to crops.

- Methyl bromide had been used for successfully controlling soil borne diseases and weeds. However, due to ozone depleting property, this fumigant was phase out for soil fumigation except minor critical use crops

EDN

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EDN™ application

Shank Injection - Broad Acre Application

Shank Injection - Bed Application

Drip/Chemigation Application

EDN Draslovka

EDN™ applied strawberry field in Australia

EDN Draslovka

EDN™ approval in Australia

Crop	Pests	Application rate
Strawberry runners, strawberries, cucurbits tomatoes and ornamentals (gerbera)	**Soil borne Pathogens:** *Bipolaris soroikiniana, Fusarium acuminatum, Fusarium oxysporum, Phytophthora cactorum, Phytophthora cryptogea Pythium sulcatum, Pythium ultimum, Phytophthora cactorum, Rhizoctonia fragariae, Rhizoctonia solani, Schlerotium rolfsi,* **Nematodes:** *Meloidogyne* spp. *Steinernema* spp. **Weeds:** *Poa annua, Spregula arvensis, Agrostis tenuis, Raphanus raphanistrum Conyza Canadensis, Lolium sp. Solanum nigrum, Amaranthus retroflexus, Portulaca oleracea, Orobanche aegyptiaca, Cyperus rotundus*	Chemigation: 30 g/m² (300 kg/ha) per treated area using drip irrigation Shank injection: 50 g/m² (500 kg/ha)

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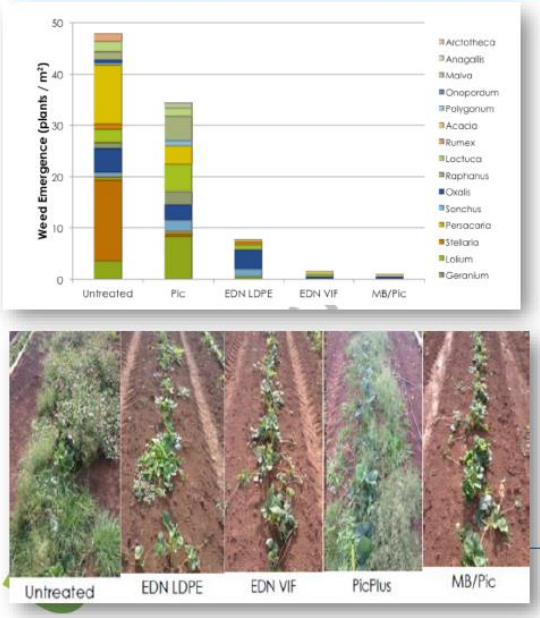
EDN™ for Weed Control



Control

EDN 50 g/m2 Shank

Draslovka

Strawberry runners development

EDN

Draslovka

EDN™ Commercial application

EDN Package

- EDN is commercially available in 50 kg product weight compliant with ISO9809-1 standard

EDN Monitors

Safety detector MSA ULTIMA XA

- Detection range 1 ppm to 50 ppm
- Electrochemical detection
- Battery life 48 hours

Dose monitor RIKEN FI-8000

- Detection range 0.4 g/m^3 – 300 g/m^3
- Optical Interferometric
- less than 5 seconds
- Other fumigants – Sulfuryl fluoride, phosphine, HCN, methyl bromide

EDN

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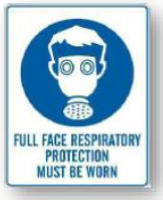
Personal Protective Equipment



- Cotton based protective work clothes long sleeves and long pants
- Appropriate chemical resistant (nitrile) gloves
- Full face mask (EN136) with type A2B2 filter
- A portable gas detector (MSA ULTIMA XA Electrochemical Detector)

EDN Draslovka

Further Information

Visit our Draslovka services Website (www.draslovka-services.com)

This site includes

- Product labels & registrations
- Product fact sheets & MSDS
- Product stewardship information
- Contact details to request more information

EDN Draslovka

Thank you for your attention

附件15、ICCBA產業會議出席證書

Australian Government
Department of Agriculture and Water Resources

ICCBA

CERTIFICATE

Presented to:

Dr SU-CHIN CHEN

For participating on:

ICCBA INDUSTRIAL CONFERENCE 2018

Bali, Indonesia, May 7th, 2018

Mr. Nathan Reid
Director, Compliance Partnership
Australian Department of Agriculture and Water Resources

Dr. Antarjo Dikin
Director, Center for Plant Quarantine and Biosafety
Indonesian Agricultural Quarantine Agency

Australian Government
Department of Agriculture and Water Resources

ICCBA
International Cargo Cooperative Biosecurity Arrangement

CERTIFICATE

Presented to:

Mr KUO-SHIOU HUANG

For participating on:

ICCBA INDUSTRIAL CONFERENCE 2018

Bali, Indonesia, May 7th, 2018

Mr. Nathan Reid
Director, Compliance Partnership
Australian Department of Agriculture and Water Resources

Dr. Antarjo Dikin
Director, Center for Plant Quarantine and Biosafety
Indonesian Agricultural Quarantine Agency

附件16、國際貨運生物安全合作協定

THE INTERNATIONAL CARGO COOPERATIVE BIOSECURITY ARRANGEMENT

THE MEMBER AGENCIES,

RECOGNISE~~I~~**~~ING~~** that, as agencies responsible for the management of biosecurity systems, their objective is to reduce the biosecurity risks associated with the movement of cargo (including commodity and non-commodity items) between their respective juristictions~~countries~~;

RECOGNISE~~ING~~ the mutual benefits gained through cooperative biosecurity initiatives;

PROMOTE CONSISTENT~~LY~~ with the prevailing laws and regulations of the~~ir~~ respective countries, territoris and regions~~Member Countries~~;

HAVE REACHED THE FOLLOWING ARRANGEMENT:

1. PURPOSE

1.1 The purpose of this Arrangement is to:

(a) facilitate and promote cooperation and information exchange among the Member Agencies, with a view to developing, implementing and maintaining consistent biosecurity measures and assurance processes for cargo traded between the Member Agencies' juristictions~~Member Countries~~ to minimise biosecurity risk;

(b) help build the capacity of Member Agencies to deliver harmonised biosecurity measures and assurance processes;

(c) standardise the training and delivery of biosecurity measures and assurance processes to improve the integrity and transparency of activities included in the Schedules; and

(d) establish a basis for the mutual recognition of biosecurity measures and assurance processes among Member Agencies.

1.2 This Arrangement records the understandings of the Member Agencies, but does not create legal obligations.

1.3 This Arrangement is intended to complement the activities of the International Plant Protection Convention (IPPC),~~,~~ the World Organization for Animal Health (OIE) and Codex Alimentarius, and the obligations of Member ~~Countries~~ Agencies as members of these organisations.

1.4 Each Participating Agency retains the right to apply further biosecurity measures and assurance processes to cargo and to refuse entry to cargo, even where~~though~~ the goods have been dealt with under the terms of a Schedule to this Arrangement.

2. DEFINITIONS

For the purposes of this Arrangement, the following definitions apply:

2.1 ***Agency*** means the authority[1] responsible for the management of biosecurity systems.

2.2 ***Applicant Agency*** means a Member Agency that submits an application, indicating its intention to participate in a specific Schedule.

~~2.3 ***Assurance Process*** includes any action intended to verify the effectiveness of a biosecurity measure.~~

~~2.4~~2.3 ***Biosecurity Measures*** means actions carried out to prevent ~~the~~ risks associated with the movement of pests and diseases ~~to other countries~~.

~~2.5~~2.4 ***Cargo*** means goods, including commodity and non-commodity.

~~2.6~~2.5 ***ICCBA*** means the International Cargo Cooperative Biosecurity Arrangement.

~~2.7~~2.6 ***Member Agencies*** means the Agencies which are participating in this Arrangement.

~~2.8 ***Member Countries*** means the countries to which the Member Agencies belong.~~

~~2.9~~2.7 ***Participating Agencies*** means the Agencies which are signatories to a Schedule/s under this Arrangement.

~~2.10 ***Provider*** means an entity (company or Agency) which provides a biosecurity measure or an assurance process to which this Arrangement applies.~~

~~2.11 ***Register of providers*** means a list of providers registered under a Schedule.~~

~~2.12~~2.8 ***Schedule*** means an annex to this Arrangement, adopted under ~~Paragraph~~ Section 7, which sets out the procedures and processes relating to a specific biosecurity measure and/or assurance process.

3. STEERING COMMITTEE

3.1 There will be an ICCBA Steering Committee consisting of one named representative from each Member Agency.

3.2 ICCBA Steering Committee meetings do not require a quorum however, decisions must be considered by all members.

~~3.2~~3.3 The Steering Committee will have responsibility for the overall strategic direction and decision making capacity of the ICCBA and will discuss and make decisions on any issues concerning the operation of the ICCBA referred to it by a Working Group or the ICCBA Secretariat.

[1]The agency may or may not have the delegated responsibility for that country's legislative or administrative authority under the National Plant Protection Organisation (NPPO) and/or the OIE for its actions.

~~3.3~~3.4 The specific roles and responsibilities of the Steering Committee will be outlined in the terms of reference for the Steering Committee.

~~3.4~~3.5 Annual face-to-face meetings of the Steering Committee will be held ~~in a Member Country~~ on a rotational basis, unless otherwise decided by the Steering Committee.

~~3.5~~3.6 Additional meetings of the Steering Committee may be held as decided by the Steering Committee. Such additional meetings may be held by telephone or computer link or other electronic means, or face-to-face.

~~3.6~~3.7 A Chairperson will be appointed by the Steering Committee on a rotational basis for each meeting.

4. ICCBA STANDING WORKING GROUPS

4.1 To ensure the effective ongoing management of the Schedules under this Arrangement, there will be an ICCBA Standing Working Group created for each individual Schedule.

4.2 Only~~Each~~ Participating Agency~~y~~ies ~~participating in~~of a particular Schedule ~~(a Participating Agency)~~ ~~should~~will be represented~~-~~ in the Standing Working Group for that particular Schedule and ~~. Only~~each Participating Agency~~y~~ies ~~i~~in that particular Schedule ~~can~~will have representation in the Standing Working Group for that Schedule.

4.3 ~~The~~ Standing Working Groups will meet as required, by telephone, computer link or other electronic means, or face-to-face.

4.4 The main functions of the Standing Working Group will be to:

(a) Provide advice and reports to the Steering Committee on matters concerning the operation of the Arrangement, pertaining to the specific Schedule(s) that the Standing Working Group is involved with;

(b) Liaise with the Secretariat and other Standing Working Groups as necessary, to ensure the ongoing effectiveness of the Arrangement and any attached Schedules;

(c) Manage the administrative requirements and assurance processes pertaining to the specific Schedule(s) that the Standing Working Group is involved with.

(d) Consider specific issues at the request of the Steering Committee.

5. ICCBA TECHNICAL WORKING GROUPS

5.1 A Standing Working Group or the Steering Committee may establish *ad hoc* Technical Working Groups to develop or address any specific treatment or

operational requirements of an existing Schedule as raised by an Agency (regardless of their participation in the Arrangement or not). These *ad hoc* Technical Working Groups will be comprised of representatives from the Member AgenciesCountries, chosen according to their technical knowledge and experience. Subject-matter experts who are not part of the Arrangement may also be engaged if their expertise will add value to the Technical Working Group.

5.2 The outcomes of the process detailed in Paragraph 5.1 will be forwarded to the Standing Working Group for this subject (where one exists), for a decision, or to the Steering Committee (where required).

5.3 A Technical Working Group can also be formed to review the viability of a new biosecurity measure if proposed by either a Member Agency or an Agency that is not party to the Arrangement. The proposal will be coordinated by the Secretariat. The outcomes of the review will be forwarded to the Secretariat, who will advise the Steering Committee accordingly. The Steering Committee will have the final decision on the inclusion of a methodology for the new biosecurity measure and, if accepted, will be responsible for forming a Technical Working Group to develop a Schedule for that biosecurity measure.

5.4 Any outcomes from actions taken as per Paragraph 5.1 of the Arrangement will not result in the exclusion of any Participating Agencies that are already participating inof that Schedule (Participating Agencies).

6. ICCBA SECRETARIAT

6.1 The Secretariat will be provided by a Member Agency (or Agencies) for a period of four (4) years and may be subject to an extension, as agreed to by the Steering Committee and accepted by the Member Agency (or Agencies).

6.2 The Secretariat will be responsible for:

(a) organising all meetings under ICCBA-, arranging external funding where applicable, and general coordination of meeting resources and attendance;

(b) providing the reporting function for all ICCBA meetings when required;

(c) maintaining all records pertaining to the operation of -ICCBA;

(d) coordinating media relations or events that require a central point of contact or management, while recognising that normally each Member Agency will be responsible for handling its own media relations;

(e) maintenance of the centralised register of providers;

(f) coordination of training and JSRs and related administration if required;

~~(g)~~(e) assisting, where necessary, in applications for funding from external sources to support the activities and function of ICCBA;

~~(h)~~(f) general administrative duties as required; and

~~(i)~~(g) facilitating the exchange of information.

7. ~~AGENCY~~ PARTICIPATION IN AND TERMINATION OF SCHEDULES UNDER THIS ARRANGEMENT

7.1 Only ~~those who are~~ Member Agencies can seek to participate in Schedule~~/~~s under this Arrangement.

7.2 Each biosecurity measure accepted as part of ICCBA will be included as a separate Schedule, and will form part of the Arrangement.

7.3 A Member Agency may ~~choose~~ apply to participate in~~implement~~ any Schedule under this Arrangement by notifying the Secretariat of its intention to do so in writing.

7.4 The revelant Standing Working Group will evaluate the proposal against the policies and procedures ~~that are relevant to~~of that particular Schedule.

7.5 Any appeals arising from, or pertaining to, the proposal will be carried out as per the approved policy and procedure.

7.6 Once adopted, the terms of a Schedule will apply to, and among, all Participating Agencies that have accepted the Schedule.

7.7 Any Participating Agency may choose to exit a Schedule, with the provision of 90 days written notice to the Secretariat. ~~Upon withdrawal, the providers of that Participating Agency's country will be removed from the register of providers.~~

8. INCLUSION OF NEW SCHEDULES UNDER THIS ARRANGEMENT

8.1 Any Agency (regardless of their participation in the Arrangement or not) may propose the addition of a new Schedule by notifying the Secretariat or the Steering Committee. The Secretariat will action this as per Paragraph 5.3 of the Arrangement.

8.2 As per the outcome of Paragraph 5.3, the Technical Working Group formed for a new Schedule will be responsible for drafting~~determining~~ the administrative requirements of that particular Schedule. Once these requirements have been determined and agreed upon by the Steering Committee then Member Agency participation in a Schedule will undergo the same assessment process outlined in ~~Paragraph~~Section 7.

8.3 All Schedules under this Arrangement will be listed in Appendix II to this Arrangement. Appendix II may be amended as required.

9. AMENDMENTS TO EXISTING SCHEDULES UNDER THIS ARRANGEMENT

9.1 Any Agency (regardless of their participation in the Arrangement or not) may propose the amendment of an existing Schedule under the Arrangement by notifying the Secretariat.

9.2 The Secretariat will inform the relevant Standing Working Group of this proposal. The Standing Working Group will action the proposal as per Paragraph 5.1 of the Arrangement.

~~**10. PARTICIPATING AGENCIES TO RECOGNISE REGISTRATION**~~

~~10.1 Each Participating Agency will have regard to the register of providers in administering the biosecurity requirements of its country, subject to the laws, regulations and policies of that country.~~

~~11.~~10. RESOLVING CONCERNS

~~11.1~~10.1 Member Agencies will seek to avoid any disputes concerning the operation of the Arrangement or its Schedules.

~~11.2~~10.2 Where any Member Agency has concerns about the application of the Arrangement ~~or its Schedules~~ by any other Member Agency, it should discuss these concerns on an Agency-to-Agency basis where possible.

~~11.3~~10.3 If concerns under 12.2 cannot be resolved or if any Member Agency considers that any objectives of this Arrangement ~~or any of the objectives of a specific Schedule~~ are being impeded as the result of the failure of another Agency or Agencies to carry out its role under this Arrangement, it may make a written representation to the Steering Committee.

~~11.4~~10.4 The Steering Committee, in attempting to resolve any concerns, will assess all physical and documentary evidence as necessary and as available at a meeting of the committee. The Steering Committee may request the assistance of the relevant Standing Working Group/s in considering the technical aspects of the concern/s. During this process, it is expected that the Steering Committee will actively consult with the Agencies concerned, ensuring that an equitable, cooperative and flexible approach is undertaken.

~~11.5~~10.5 The Steering Committee will have 90 days to finalise a recommendation and provide this to the Agencies concerned.

~~11.6~~10.6 Agencies will ~~-~~consider the recommendations of the Steering Committee and endeavour to address and action them accordingly.

~~11.7~~10.7 Pending resolution of any non-performance issues, other Participating Agencies in a particular Schedule may take measures consistent with ~~their national~~relevant legislation to ensure the integrity of biosecurity measures conducted ~~by providers from~~in the duristiction of the non-performing ~~country~~Participating Agency.

~~12.~~11. KEY CONTACT PERSON/S

~~12.1~~11.1 Each Member Agency will appoint a Contact Person responsible for managing the liaison between it and all other Member Agencies, and will be the first point of contact on matters relating to this Arrangement.

~~12.2~~11.2 Any changes in the details of the Contact Person shall be communicated to the Secretariat and Member Agencies within 15 days of this change.

~~13.~~12. COSTS AND RESOURCES

~~13.1~~12.1 Each Member Agency is responsible for any costs it incurs in carrying out its responsibilities under this Arrangement, subject to any arrangements that may be reached between Member Agencies ~~or countries~~ to provide assistance.

~~13.2~~12.2 ~~The~~ Member Agencies will make available resources and officials for any tasks taken under the Arrangement, including the Schedule(s) in which they are participating, as far as their technical and economic capacity allows.

~~13.3~~12.3 The costs of the Secretariat relating to its core responsibilities set out in ~~Paragraph~~ Section 6 will be funded by the Member Agencies that provide the Secretariat. The Secretariat may accept requests made by the Steering Committee or a Working Group to carry out activities in addition to its core responsibilities, subject to agreement being reached on the funding of those activities.

~~13.4~~12.4 Member~~The~~ Agencies will individually or jointly investigate funding sources and develop proposals to finance cooperative biosecurity initiatives where applicable and this may be coordinated by the Secretariat.

~~14.~~13. INTELLECTUAL PROPERTY

~~14.1~~13.1 Intellectual property provided or created for the purposes of this Arrangement, or derived from such material, will remain or vest in the Agency/ies that provided or were involved in creating the material, consistent with international law and practices.

~~15.~~14. AMENDMENTS TO THE ARRANGEMENT

~~15.1~~14.1 Any Member Agency may propose an amendment to this Arrangement, other than the Schedule(s).

~~15.2~~14.2 Proposed amendments to the Arrangement should be sent to the Secretariat, which will then be forwarded to all Member Agencies within 15 days.

~~15.3~~14.3 Amendments to the Arrangement, other than the Schedules, may be adopted only when agreed to by at least 80 percent of the Steering Committee. [A1]

~~15.4~~14.4 Each amendment will come into effect on the date it is adopted, or on such other date as is determined by the Steering Committee, and will be reflected in Appendix III to this Arrangement. Appendix III may be amended as required.

~~16.~~15. ENTRY INTO EFFECT OF THE ARRANGEMENT

~~16.1~~15.1 This Arrangement will only have effect when there are at least three (3) Member Agencies.

~~16.2~~15.2 After the Arrangement has come into effect, an Agency may become a Member Agency by formally notifying the Secretariat in writing of its intention to do so.

~~16.3~~15.3 Appendix I to this Arrangement records the Agencies that have notified the Secretariat of their intention to participate in this Arrangement. Appendix I may be amended as required.

~~17.~~16. WITHDRAWAL FROM THE ARRANGEMENT

~~17.1~~16.1 A Member Agency may withdraw from this Arrangement by giving 90 days written notice to the Secretariat.

~~17.2~~16.2 If a Member Agency withdraws from the Arrangement, it will automatically withdraw from any Schedules that it is participating in.

~~18.~~17. REVIEW OF THE ARRANGEMENT

~~18.1~~17.1 This Arrangement will be subject to review every~~,~~ three (3) years ~~from the date it comes into effect~~.

~~18.2~~17.2 The review process will be coordinated by the Secretariat and any amendments to the Arrangement resulting from the review will be actioned as per ~~Paragraph 17~~Section 14.

APPENDIX I

The following Agencies have notified the Secretariat of their intention to participate in this ARRANGEMENT:

~~Member country~~	~~Member Agency~~	~~Date Notified~~
~~Representing Belize, Honduras, Nicaragua, Mexico, Guatemala, Costa Rica, Panama, El Salvador and the Dominican Republic~~	~~International Regional Organisation for Plant and Animal Health – OIRSA~~	~~20 June 2013~~
~~Australia~~	~~The Australian Department of Agriculture, Fisheries and Forestry~~	~~23 July 2013~~
~~Fiji Islands~~	~~Biosecurity Authority of Fiji~~	~~13 September 2013~~
~~Peru~~	~~National Agrarian Health Service~~	~~30 September 2013~~
~~The Philippines~~	~~Bureau of Plant Industry~~	~~07 November 2013~~
~~Malaysia~~	~~Department of Agriculture Plant Biosecurity Division~~	~~11 March 2014~~
~~Papua New Guinea~~	~~National Agriculture Quarantine and Inspection Authority~~	~~21 March 2014~~
~~Indonesia~~	~~Indonesian Agricultural Quarantine Agency~~	~~7 July 2014~~
~~New Zealand~~	~~Ministry for Primary Industries~~	~~12 August 2014~~
~~Thailand~~	~~Thai Department of Agriculture~~	~~28 September 2016~~
~~Chile~~	~~Chilean Agriculture and Livestock Service~~	~~12 October 2016~~
Member Agency	Countries, economies and regions represented	Date Notified
International Regional Organisation for Plant and Animal Health – OIRSA	Representing Belize, Honduras, Nicaragua, Mexico, Guatemala, Costa Rica, Panama, El Salvador and the Dominican Republic	20 June 2013
The Australian Department of Agriculture, Fisheries and Forestry	Australia	23 July 2013
Biosecurity Authority of Fiji	Fiji Islands	13 September 2013
National Agrarian Health Service	Peru	30 September 2013
Bureau of Plant Industry	The Philippines	07 November 2013
Department of Agriculture Plant Biosecurity Division	Malaysia	11 March 2014
National Agriculture Quarantine and Inspection Authority	Papua New Guinea	21 March 2014
Indonesian Agricultural Quarantine Agency	Indonesia	7 July 2014
Ministry for Primary Industries	New Zealand	12 August 2014
Thai Department of Agriculture	Thailand	28 September 2016
Chilean Agriculture and Livestock Service	Chile	12 October 2016
Bureau of Animal and Plant Health Inspection and Quarantine	Taiwan	13 February 2018

APPENDIX II

This table lists those cooperative biosecurity initiatives agreed to by the Agencies:

i. **Schedule A:**
ii. **Schedule B:**
iii. **Schedule C:**

APPENDIX III

This table lists the revisions to the Arrangement and the date they come into effect:

Version	Description	Nature of change	Date
1	Final Arrangement		13 September 2013
1.1	First revision	Scheduled review of the Arrangement	

附件17、澳大利亞溴化甲烷燻蒸處理操作方法2.0版

Methyl bromide fumigation methodology

Version 2.0

Cataloguing data
This publication (and any material sourced from it) should be attributed as: Department of Agriculture and Water Resources, 2017, *Methyl bromide fumigation methodology*, Canberra, March. CC BY 3.0.

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Telephone 1800 900 090
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Purpose

This methodology sets out the minimum requirements for treatment providers performing methyl bromide fumigations on commodities and/or associated packaging suited to such treatments for Quarantine and Pre–shipment (QPS) purposes. This methodology is the basis for compliance auditing of treatment providers to monitor their performance of effective QPS treatments with methyl bromide.

Importing countries have the right to impose more stringent treatment conditions to address their individual biosecurity risks. In such cases, those additional conditions take precedence over the requirements of this methodology and must be complied with to the satisfaction of the relevant authority of the importing country.

Fumigation treatment providers registering to perform treatments in accordance with these requirements must have the equipment, facilities, accredited fumigators and management and administrative procedures necessary to ensure that all relevant treatments comply with these requirements.

Countries receiving treatment certification through this system expect the treatment has been undertaken in accordance with this methodology. Treatment providers found to be wilfully and consistently not complying with the requirements of this methodology and/or other specified treatment conditions will have their registration status changed to 'unacceptable' until they can demonstrate satisfactory compliance.

Methyl bromide is listed as a category 1 ozone depleting substance under the Montreal Protocol 1992. Performing methyl bromide fumigations in accordance with these requirements will reduce the use of methyl bromide by minimising the need for re-treatment of consignments due to ineffective fumigations caused by poor fumigation practices.

Scope

This document applies to commercial and government treatment providers performing QPS methyl bromide fumigation treatments for countries that have adopted a specific methyl bromide treatment schedule.

This document is not intended to specifically cover the performance of methyl bromide fumigation treatments under ISPM 15; however, the basic principles, requirements and recommendations described in this document and the associated guideline are still generally applicable.

Even though the basic principles and requirements would be relevant this document is not intended to specifically cover fumigations of vessels (whether it is the vessel itself or its cargo) silos or other storage facilities, buildings or other fumigations that are not done in the types of enclosure described herein and not related to import or export.

How to use this document

Some of the requirements in this methodology only apply in certain circumstances, generally related to the type of enclosure used or fumigating perishables. It is important for the fumigators and compliance auditors to understand the purpose of the requirements and the outcomes they are intended to achieve and the particular circumstances in which they apply.

This document should be read in conjunction with the *Guide to performing QPS fumigations with methyl bromide,* which provides information on how to meet these requirements in commonly encountered situations.

Contents

1 Prior to fumigation

Target of the fumigation

1.1.1 The fumigator must know what the target of the fumigation is.

1.1.2 The target of the fumigation must be recorded on the fumigation documentation.

Consignment suitability

1.2.1 The fumigator must determine if the consignment is suitable for fumigation with methyl bromide.

1.2.2 If the consignment does not conform to the suitability requirements remedial action must be taken or an alternative acceptable treatment method used.

Free airspace

1.3.1 There must be free space throughout the enclosure to allow the fumigant to freely circulate around the target of the fumigation.

1.3.2 There must be sufficient free airspace to permit the positioning of sampling tubes in appropriate locations within the enclosure. See 4.1 Concentration sampling tubes

1.3.3 Some treatments may specify a maximum load factor in the enclosure. The volume of commodity must not exceed the specified load factor as a proportion of the enclosure volume and must be stacked so there is sufficient separation between items to allow the fumigant to circulate freely and penetrate easily into boxes, bags or other types of packaging.

1.3.4 For perishable commodities, the following free air space requirements apply unless otherwise stated in the treatment schedule being applied:a maximum load factor of 80%;packages must be placed on pallets or raised off the ground by at least 100mm by other means.

Timber thickness and spacing

1.4.1 Untreated timber products must have at least one physical dimension which is less than 200 mm thick.

1.4.2 Timber and timber product fumigations must be conducted before any surface coating are applied, unless all parts of the timber or timber product have at least one uncoated surface and a maximum thickness of 100 mm from the uncoated surface.

1.4.3 Where timber is the target of the fumigation it must be separated by a minimum of 5 mm of airspace every 200 mm. This separation can be horizontal or vertical.

Impervious wrappings, coatings and surfaces

1.5.1 The target of the fumigation must not be coated in materials that will prevent the methyl bromide from penetrating into the target of fumigation such as lacquers, paints, waxes, natural oils, veneers or plastic wraps.

1.5.2 Impervious wrappings must be removed, opened or slashed prior to fumigation in such a way to allow methyl bromide to come into contact with and, if needed, penetrate into the target of the fumigation.

1.5.3 Requirement 1.5.2 is not necessary if the wrapping complies with 1.6 Impervious wrapping perforation requirements.

1.5.4 Where the target of fumigation is a perishable commodity, all packaging material must also be fumigated.

1.5.5 Due to the short exposure periods for many perishable commodities, all packaging must be opened or otherwise arranged as follows to allow the fumigant to readily circulate around and into the target of the fumigation:

Products that are tightly packed into cartons in plastic sleeves (e.g. Cut flowers) must be loosened within boxes to ensure adequate gas penetration during fumigation.

Polythene type liners or non-perforated liners must be opened at the top.

If open ends of plastic sleeves are packed together in the middle of the carton, the cartons must be re-packed with the open ends be placed towards the sides of the cartons.

Cartons without ventilation holes or with flowers in plastic sleeves obscuring the holes must be stacked with the tops open or with holes punctured in the sides.

Impervious wrapping perforation requirements

1.6.1 Impervious wrappings must have 4 or more holes of 6 mm diameter or 5 or more holes of 5 mm diameter for every 100 mm x 100 mm of surface area. Wrappings with at least 6 pinholes per 10 mm x 10 mm surface area are also acceptable.

1.6.2 The wrapping must be in a single layer so the perforations are not blocked by the wrapping overlapping itself.

Site suitability

1.7.1 The fumigation site must:

have adequate space to establish a risk area around the enclosure

allow for safe ventilation

be flat and even

be well ventilated

have power available, either mains or generator.

Safety

Risk assessment

2.1.1 Before commencing any fumigation a risk assessment must be carried out to determine if any hazards are present and evaluate the potential consequences to:

fumigation personnel

people in the vicinity

occupants of surrounding buildings.

2.1.2 Appropriate control measures must be in place to address the hazards identified.

2.1.3 The risks must be reviewed as needed to respond to changing circumstances and the control measures must be adjusted accordingly.

2.1.4 The designated fumigator–in–charge is responsible for the safe conduct of the fumigation.

Risk area

2.2.1 A risk area must be established around the perimeter of the enclosure warning people the fumigation is taking place.

2.2.2 The risk area must be demarcated by a physical barrier for the duration of the fumigation.

2.2.3 The size of the risk area should be set according to the risk but must not be less than:

3 metres from the enclosure outdoors

6 metres from the enclosure inside a building or structure.

2.2.4 For fumigations in a chamber, see 3.4 Fumigation chambers, a risk area is not required after the fumigant has been applied provided that the chamber is locked from the time the fumigant is ready to be applied until the fumigant has been ventilated and the concentration verified at or below the TLV–TWA. See 9.1 Threshold limit value – time weighted average (TLV–TWA).

A risk area must still be established according to requirement *2.2.3* and personal protective equipment must be worn while injecting the fumigant into the chamber to protect the fumigator and others against accidental exposure to the fumigant from a failure in the supply system.

2.2.5 Warning signs must be placed around the enclosure. They must:

be large enough to be visible from a reasonable distance

be visible from all angles of approach

display easily understood symbols indicating danger and/or toxic gas is in use

provide contact details of the fumigator

be in a language or languages appropriate to the location.

2.2.6 The risk area, with the exception of chamber fumigations, must be in force from the time immediately prior to connection of the methyl bromide supply (either cylinder or can) to the supply system up until the gas concentration in the risk area and the enclosure is verified at or below the TLV–TWA.

2.2.7 Anyone entering the risk area while it is in force must be wearing appropriate Personal Protective Equipment (PPE) at all times.

Personal protective equipment (PPE)

2.3.1 Suitable respiratory protection must be worn at all times inside the risk area while it is in force.

2.3.2 Respiratory protection must be worn at all times when inside the buffer zone during ventilation. See 9 Ventilating the enclosure.

2.3.3 A full–face respirator must be:
operated in accordance with the manufacturer's instructions

fitted with the correct gas filter canister (AX for methyl bromide) and replaced in accordance with the manufacturer's instructions

maintained in good condition with all valves clean and intact

able to form an air–tight seal against the face of the fumigator.

2.3.4 Self–contained breathing apparatus must be:

operated in accordance with the manufacturer's instructions

used only by properly trained personnel

maintained in good working order

refilled from a safe source.

Fumigation enclosures

Gas-tightness

3.1.1 All fumigation enclosures must be sufficiently gas–tight to retain the fumigant for the duration of the exposure period and maintain the concentrations at or above the requirements.

Sheeted enclosures

3.2.1 The surface on which the sheeted enclosure will be created must be:

- impervious to methyl bromide or covered with a gas–proof sheet if the surface is not impervious
- free of debris that might prevent a gas–tight seal or damage the sheet
- free of cracks and drains or other openings that will permit excessive leakage.

3.2.2 The fumigation sheets must be impervious to methyl bromide. They must be able to retain the required concentration for the duration of the fumigation without needing to add additional methyl bromide due to permeation through the sheet.

3.2.3 A gas–tight seal must be created between the fumigation surface and the sheet.

3.2.4 If one or more shipping container is fumigated in a sheeted enclosure at least one door of each container must be open during the fumigation.

Un-sheeted shipping containers

3.3.1 A shipping container can be used as a fumigation enclosure if it can be sealed to make it adequately gas–tight. The fumigator must;

- check the container for any visible holes or damage that would make it unsuitable seal the air vents from the outside
- install sampling tubes— see 4.1 Concentration sampling tubes
- install a fan—if there is insufficient space the container must be fumigated as a sheeted enclosure
- arrange the tubes and leads so they exit the container where the doors meet at the base of the container
- create a barrier to reduce air flow under the container.

3.3.2 The methyl bromide must be applied through the door seals and the supply pipe must be removed after the process is complete. This is easiest to do through the door seals where they meet at the top of the container.

3.3.3 Where a false door is fitted to create a gas tight seal, the supply pipe, sampling tubes and power leads must pass through the false door.

3.3.4 Where an un-sheeted shipping container fumigation is conducted on a skeletal trailer, leak checks must be conducted on the underside of the container. A barrier to reduce airflow under the container is not required.

3.3.5 Shipping containers under gas must not be moved until they have been ventilated.

3.3.6 If the target of the fumigation includes the exterior of the container, for example Giant African Snail treatments, the container/s must be enclosed under gas–proof sheets.

Fumigation chambers

3.4.1 Fumigation chambers are permanent structures designed specifically for fumigation. To be considered a fumigation chamber for the purposes of this methodology they must:

- be constructed from rigid materials on all sides, including the door
- be permanently sealed along all joins between the walls, roof and floor
- be gas–tight once the door is closed without the need to use tape, sealant, sand snakes or any other means.
- not have anything, such as sampling tubes, supply pipes or electrical leads, enter the chamber through the door that will interfere with the seal
- have an inbuilt extraction system that actively removes the fumigant from the enclosure
- pass a pressure test at least every six months according to 3.5 Pressure testing.

Pressure testing

3.5.1 Raise the pressure in the enclosure by 250 Pa. Count the seconds it takes to fall from 200 Pa to 100 Pa. If the time is 10 seconds or more the enclosure has passed the pressure test and is considered gas–tight for fumigation purposes.

3.5.2 The pressure test must be performed with the enclosure set up ready for fumigation. Sampling tubes, supply pipes and electrical leads must be in place during the pressure test as they would be for a fumigation.

Preparing the fumigation enclosure

Concentration sampling tubes

4.1.1 Each sampling tube must be clearly identified according to their location within the enclosure.

4.1.2 The sampling tubes must be free of kinks and blockages.

4.1.3 The diameter of the sampling tubes must fit the inlet of the concentration measuring instrument.

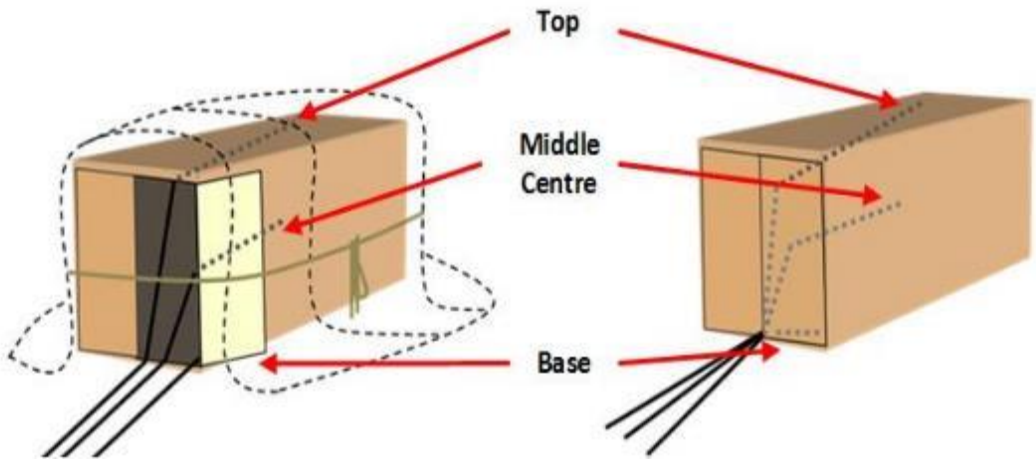
Concentration sampling tube placement – non-perishable commodities

4.2.1 Enclosures that are 30 m^3 or less in volume require at least one sampling tube positioned as near as practicable to the top centre of the commodity.

4.2.2 Enclosures larger in volume than 30 m^3 must have at least three samplings tubes. The sampling tubes must be positioned to check that even distribution of the fumigant has been achieved (Figure 1). The tubes must be placed as close as practicable to:

- the top of the commodity at one end of the enclosure
- the centre of the commodity around the middle of the enclosure
- the base of the commodity at the opposite end of the enclosure from the top sampling tube.

Figure 1: Concentration sampling tube positions within a single enclosure.

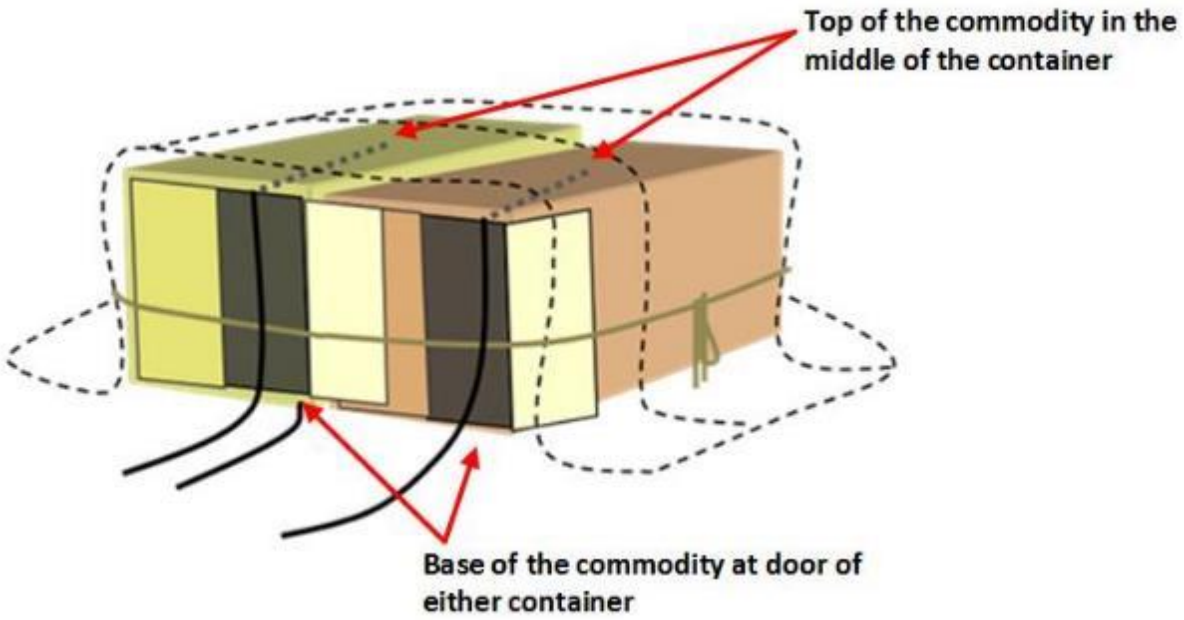


4.2.3 If a consignment consists of more than one un–sheeted container then each container is a separate fumigation and needs to have a minimum of three sampling tubes in each container.

4.2.4 Two containers under a gas–tight sheet is a single enclosure and must have at least three sampling tubes placed as close as practicable to (Figure 2):

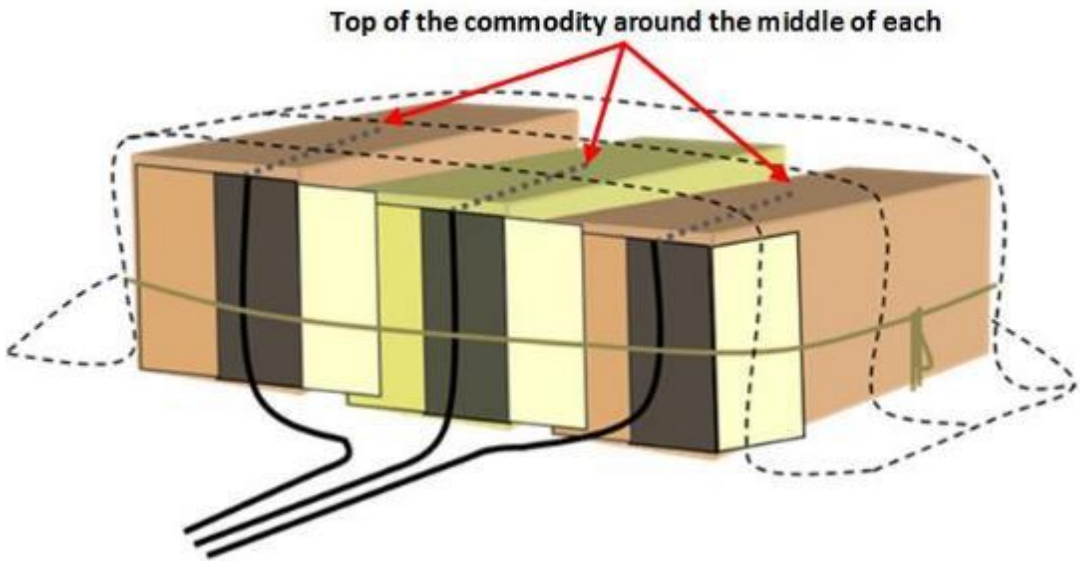
- the top of the commodity in the middle of each containers
- the base of the commodity at the door in either container.

Figure 2: Concentration sampling tube positions within two containers under a single enclosure.



4.2.5 Three or more containers under a gas–proof sheet is a single enclosure and must have at least one sampling tube placed as close as practicable to the top of the commodity in the middle of each container (Figure 3).

Figure 3: Concentration sampling tube positions within three containers under a single enclosure.



Four containers in one enclosure must have at least four sampling tubes, five containers, five sampling tubes and so on.

Concentration sampling tube placement – perishable commodities

4.3.1 All perishable fumigations must have at least three sampling tubes placed within the middle of packaging, and in the positions specified in 4.3.3, to demonstrate that the treatment fumigant concentration is reached and maintained for the full exposure period within the commodity.

4.3.2 For cut flowers, this is within a sleeve or bunch in the centre of a carton. For other produce, this is in the centre of the carton.

4.3.3 Where cartons are stacked in the enclosure, sampling tubes must be placed inside cartons located in the following positions:

- the top carton at one end of the enclosure
- the centre carton in the middle of the enclosure
- the bottom carton at the opposite end of the enclosure from the top sampling tube.

4.3.4 Where different types packaging are present, sampling tubes must be placed in a representative carton of each packing type.

Temperature probes for perishable commodities

4.4.1 Where the treatment schedule requires the commodity temperature of perishable fumigations is used for dose calculations, temperature readings must be taken by:

- For fruit and vegetables, the pulp temperature must be measured by inserting temperature probes into the centre of a piece, or pieces, of fruit or vegetable in the middle of a carton, ensuring that the whole temperature probe is covered.
- For cut flowers, leaf or stem material, temperate probes must be placed within the bunch in the middle of a carton.

4.4.2 At least three temperature readings must be taken from different cartons in different locations and, if applicable, different varieties within the consignment.

4.4.3 The temperature probes must be maintained to an accuracy of at least plus or minus (+/-) 1 °C.

Fumigant supply pipes

4.5.1 Multiple containers fumigated in a single enclosure must have at least one supply pipe placed in each container.

4.5.2 For fumigations under sheets the supply pipes must be left in position for the duration of the exposure period.

4.5.3 The supply pipes must be sealed once the fumigant has been applied.

Fans

4.6.1 Enclosures must have at least one fan for each 100 m^3 of volume or part thereof.

4.6.2 Multiple containers fumigated in a single enclosure must have at least one fan to be placed in each container.

Calculating the dose

Dose rate

5.1.1 The dose rate for the appropriate temperature prescribed by the relevant authority must be used for QPS fumigations with methyl bromide.

Dose rate compensation for temperatures below 21 °C

5.2.1 If the treatment rate is set with a minimum of 21 °C and the temperature within the enclosure is expected to fall below 21 °C at any time during the exposure period, the dose rate must be adjusted to compensate for the lower temperature.

5.2.2 In the absence of any other specific schedule set by the relevant authority the following compensation must be made: For each 5 °C, or part thereof, the temperature is expected to fall below 21 °C add 8 g/m^3 to the prescribed dose rate.

Temperature

5.3.1 The temperature of the consignment must be equal to or above the minimum allowable temperature before any fumigant can be applied.

5.3.2 Unless stated otherwise in a specific treatment schedule, fumigation of non-perishable commodities is not permitted if the ambient minimum temperature is forecast to fall below 10 °C.

5.3.3 Unless stated otherwise in a specific treatment schedule, fumigation of perishables is not permitted if the commodity temperature is below 10 °C.

5.3.4 The commodity temperature of perishable commodities must be measured according to 4.4 Temperature probes for perishable commodities and the lowest recorded temperature used to calculate the dose rate. See 5.2 Dose rate compensation for temperatures below 21 C

5.3.5 Where the enclosure is subject to the ambient temperature of the surrounding environment, the fumigator must check what the forecast minimum temperature will be during the exposure period for the location closest to the fumigation site and adjust the dose rate accordingly.

5.3.6 The forecast minimum temperature used and the source of the information must be recorded.

5.3.7 Fumigation is not permitted if the temperature of the enclosure and consignment is expected to fall below any specified minimum temperature during the exposure unless the temperature can be raised to, and maintained at or above, the allowed minimum temperature by using heaters or moving the consignment inside a structure where the temperature can be adequately controlled.

5.3.8 Where the fumigation is performed in a controlled temperature environment, the temperature within the enclosure must be monitored and recorded. Temperature recording instruments must be placed as far away as practicable from the heat source.

Dose calculation

5.4.1 The dose must be calculated by multiplying the dose rate (including any adjustments) by the volume of the enclosure. The formula is:

Dose (g) = Enclosure Volume (m^3) x Dose Rate Concentration (g/m^3)

Enclosure volume

5.5.1 If the fumigation is done under gas–proof sheets, the external dimensions must be measured each time and used to calculate the volume.

5.5.2 For fixed sized enclosures such as chambers and un–sheeted containers the internal volume must be used.

Chloropicrin

5.6.1 When methyl bromide is mixed with chloropicrin, compensation must be made to the dose to ensure that full amount of methyl bromide required is applied to the enclosure.

For methyl bromide supplied with 2% chloropicrin the formula is:

Dose = (Volume x Concentration) ÷ 0.98

Rounding

5.7.1 Once the dose has been calculated, the amount must be rounded up to next increment that can be accurately measured by the equipment used to dispense the dose. If the methyl bromide is supplied in cans then the dose must be rounded up to the next full can.

5.7.2 The dose must not be rounded up until all other calculations have been completed.

Applying the dose

Vaporising the methyl bromide

6.1.1 A vaporiser must be used when methyl bromide is applied to the enclosure.

6.1.2 The heat source for the vaporiser must be capable of heating the water in the vaporiser to at least 65 °C and maintaining the temperature at or above this while the methyl bromide is being applied to the enclosure.

6.1.3 If the temperature of the water falls below 65 °C, the rate of methyl bromide release must be slowed or stopped until the water temperature is heated back above 65 °C.

6.1.4 The time methyl bromide injection was completed must be recorded.

6.1.5 The connections in the supply system must be secure and free from leaks.

Checking for leaks

6.2.1 Suitable leak detection equipment must be used.

6.2.2 The leak detection equipment must be sensitive enough to reliably detect methyl bromide concentrations down to 20 ppm.

6.2.3 The leak detection equipment must be maintained and electronic equipment calibrated in accordance with the manufacturer's instructions.

6.2.4 During the injection of the dose the supply system must be checked for leaks. If a leak is detected the problem must be rectified before continuing to inject the dose.

6.2.5 The fumigation enclosure must be checked for leaks. If leaks are detected they must be rectified.

Circulating the fumigant

6.3.1 The fans must be operating prior to and during the injection of the fumigant dose into the enclosure.

6.3.2 The fans must be turned off before taking concentration readings.

Monitoring fumigant concentration levels

Concentration measuring instruments

7.1.1 The instrument used for measuring fumigant concentrations in the enclosure must be fit for purpose and in good working order.

7.1.2 The concentration measuring instruments must be calibrated and/or serviced according to the manufacturer's instructions.

7.1.3 The fumigator must have a copy of the user's manual for the particular instrument they use and must operate the equipment in accordance with the manual.

7.1.4 The instrument must be fitted with any moisture, carbon dioxide or other filters as specified by the manufacturer to suit the circumstances of the fumigation.

Monitoring frequency

7.2.1 Concentration readings must be taken at the start of the fumigation and at the end of the exposure period for all fumigations.

Additional readings can be taken at any time during the exposure period to check the concentrations are equal to or above the levels required for an effective treatment. See 8. Topping-up to compensate for low concentrations for details on topping-up the concentration levels.

7.2.2 Fumigations with exposure periods longer than 24 hours require concentration readings to be taken at least every 24 hours in addition to the start and end point readings.

Start time of the fumigation

7.3.1 The fumigation exposure period starts when:

- all concentration readings are equal to or above the standard concentration, and

- equilibrium has been established

7.3.2 Equilibrium is achieved when the highest concentration reading is within 15% of the lowest concentration reading.

The formula for calculating equilibrium is:

$$\frac{\textbf{Highest reading – Lowest reading}}{\textbf{Lowest reading}} \textbf{ X 100 = \%}$$

7.3.3 If the result of this calculation is more than 15%, equilibrium has not been achieved and the fans must be turned on again to further circulate the fumigant. Additional readings must then be taken until equilibrium has been achieved or the concentration falls below the standard concentration. Once initial equilibrium has been achieved it is not required at any other time.

7.3.4 A concentration reading must be taken from all sampling tubes.

7.3.5 The concentration readings must all be at or above the standard concentration (Table 1) or as specified in a treatment schedule.

Table 1 Time of concentration readings after release and initial concentration dose rate percentage required

Time after fumigant release	Per cent of initial dose rate concentration
15 to 30 minutes	85% or more
30 minutes to 1 hour	75% or more
more than 1 hour	70% or more

~~19.~~18. Note: See Appendix 4 Methyl bromide monitoring table for the standard concentrations required for a range of initial dose rates at

7.3.6 If additional fumigant needs to be added before start point has been reached, the amount must be calculated by subtracting the lowest concentration reading from the initial dose rate and multiplying that by the volume of the enclosure.

The formula for this is:

(Initial dose rate – Lowest concentration reading) x Volume

7.3.7 If more fumigant is added to the enclosure before start time is achieved, the time the injection of additional fumigant is completed becomes the new injection completion time for determining the required start time concentration.

7.3.8 All initial concentration readings and the time they were taken must be recorded. This includes any readings taken prior to achieving start point.

Minimum concentration levels

7.4.1 A minimum concentration of fumigant must be maintained within the enclosure during the exposure period.

7.4.2 The concentration of fumigant must not fall below the levels specified in Appendix 5: Concentrations for dose rates and times, or Appendix 6: where a treatment schedule requires a minimum gas retention of 80%.

Note: Fumigations for ISPM 15 require a minimum gas retention of 50% of the initial dose rate at the end of 24 hours.

End of the exposure period

7.5.1 The elapsed time between the start time and the end time of the fumigation must not be less than the prescribed exposure period.

7.5.2 After the specified exposure period has elapsed concentration readings from all sampling tubes must be taken. The readings and the time they were taken must be recorded on the Record of Fumigation.

7.5.3 The final concentration readings must all be at or above the Standard concentration for the required exposure period. If any of the readings are below the Standard concentration, the fumigation has failed unless the option of end point top-up is permitted.

Topping-up to compensate for low concentrations

Topping-up

8.1.1 If concentration monitoring indicates that fumigant levels are at risk of falling below the Standard concentration, then the target of the fumigation may not be exposed to the minimum lethal dose needed to for effective treatment. Therefore, in some circumstances, the fumigator can add extra methyl bromide to increase the concentration levels to prevent the fumigation from failing.

8.1.2 The top–up amount must be applied to the enclosure in the same way as the original dose, that is:

- vaporised. see 6.1 Vaporising the methyl bromide
- fans on
- PPE worn.

8.1.3 After adding the top–up amount and allowing time for the extra fumigant to circulate, a concentration reading must be taken from the sampling tube that had the lowest reading to verify that the fumigant level is back above the Standard concentration.

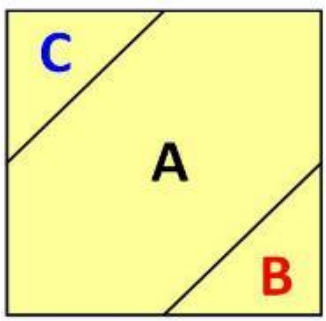
8.1.4 Equilibrium is NOT required.

8.1.5 Details must be recorded on the Record of Fumigation.

Calculating the top-up amount

8.2.1 To calculate the top-up amount, subtract the lowest concentration reading from the maximum top-up concentration and multiply by the volume of the enclosure (Figure 4).

Figure 4 Methyl bromide



A = Standard concentration.
B = Minimum concentration to allow top–up.
C = Maximum top-up concentration.
See Appendix 4: Methyl bromide monitoring table

minimum concentration requirement and top-up calculation guide

(C – lowest concentration reading) x enclosure volume = top-up amount

8.2.2 Adjust for chloropicrin if applicable. See 5.5 Chloropicrin.

8.2.3 Round-up. See 5.6 Rounding.

Restrictions on topping-up

8.3.1 Topping-up the concentration is NOT permitted if:

- the lowest concentration reading is below the minimum concentration to allow top-up
- the lowest concentration reading is above the maximum top–up concentration
- the fumigation exposure period is less than 12 hours
- it will result in exposure to excessive concentrations of methyl bromide that will adversely affect that commodity.

8.3.2 Where the concentration readings at any of the sampling tubes, at any time, is below the minimum concentration to allow top-up, the fumigation has failed and topping-up is not permitted.

Topping-up during the exposure period

8.4.1 If a top–up is done during the normal exposure period, no extension of the exposure period, is required.

8.4.2 Multiple top–ups are permitted during the exposure period.

8.4.3 If a top–up is required during the second half of the exposure period it is indicative of excessive leakage rather than sorption by the commodity so the enclosure must be re–checked for leaks.

Topping-up at the end of the exposure period

8.5.1 If the lowest of the concentration readings taken at the end of the exposure period is below the standard concentration but equal to or above the minimum to allow top–up, extra fumigant must be added. See 8.2 Calculating the top-up amount.

8.5.2 If a top–up is done at the end of the normal exposure period, the fumigation must be extended for at least another four hours to allow time for the extra fumigant to take effect.

8.5.3 Only one extension of the exposure period is allowed. If, at the end of the extended period, the lowest reading is below the Standard concentration as specified for the original exposure period, the fumigation has failed.

Ventilating the enclosure

Threshold limit value - time weighted average (TLV-TWA)

9.1.1 The enclosure must be ventilated until the concentration of fumigant within the enclosure falls below the TLV–TWA. The TLV–TWA is 5 ppm unless a lower concentration is imposed by the relevant authorities in the jurisdiction in which the fumigation takes place.

9.1.2 The equipment used for measuring TLV–TWA must be fit for purpose and capable of accurately measuring the actual concentration, not just the presence, of methyl bromide in the range of 1 to 20 ppm.

9.1.3 If stain tubes are used, they must be used in conjunction with the sampling pump specified by the manufacturer.

9.1.4 If electronic instruments are used they must be calibrated and serviced in accordance with the manufacturer's instructions.

Releasing the fumigant from the enclosure

9.2.1 At the end of the exposure period the fumigant must be fully ventilated from the enclosure in a controlled and safe manner.

9.2.2 An assessment of the risks must be done to manage the ventilation process so that unprotected personnel in the vicinity are not exposed to unsafe levels of fumigant. The assessment must take into account:

- prevailing wind direction
- location and proximity of unprotected personnel
- establishment of a temporary buffer zone around the enclosure that is sufficient to prevent unprotected personnel in the vicinity from being exposed to unsafe levels of methyl bromide
- prevention of unprotected personnel entering the buffer zone during ventilation.

9.2.3 Unprotected personnel are not permitted to enter the risk area until the fumigator verifies that concentration in the area and throughout the enclosure is at or below the TLV–TWA.

9.2.4 If the consignment is fumigated in the shipping container/s that will be used to transport the goods, then each container must be checked individually to verify gas clearance below TLV–TWA.

Releasing the consignment from the fumigator's control

9.3.1 The consignment can only be released from the fumigators control once the following conditions have been met:

- The fumigation has been performed in accordance with requirements,

Or

- The fumigation has failed and it is subsequently unsuitable for further treatment with methyl bromide, requiring the consignment to be sent for an alternative treatment option,

And

- The fumigant concentrations have been verified to the TLV–TWA or below.

9.3.2 The TLV–TWA readings and the time they were taken must be recorded.

Documentation

Record of Fumigation

10.1.1 The fumigator must record sufficient information to demonstrate that the fumigation complied with these requirements.

10.1.2 At a minimum it must include the following:

- job identification
- client or customer name
- start date of the fumigation

- location – the site address where the fumigation was performed
- a description of the consignment
- the target of the fumigation – why is the fumigation being performed
- consignment identification – container number/s, bill of lading or other means to clearly identify the consignment
- a declaration that the consignment is suitable for fumigation with the requirements set out at in section 1 Prior to Fumigation
- type of enclosure
- enclosure volume
- chamber load factor – expressed as % of chamber volume – note: this is only for perishables
- the specified dose rate and exposure period
- the forecast minimum temperature and any adjustment made for temperatures below 21 °c (and commodity temperature readings for perishables)
- the dose – amount of fumigant to be used and the actual dose used
- the time the injection of the dose into the enclosure was completed
- the concentration readings from each sampling tube and the time they were taken
- the TLV–TWA readings and the time they were taken
- the name and signature of the fumigator–in–charge.

Note: See Appendix 1: Example record of fumigation for an example Record of Fumigation.

10.1.3 The Record of Fumigation must be completed on the fumigation site as the tasks are performed and copies must be maintained for audit purposes for a minimum of two years.

10.1.4 Recording of false or misleading information is not permitted under any circumstances.

Fumigation treatment certificate

10.2.1 A fumigation treatment certificate can be issued by a suitably accredited person once they are satisfied that the fumigation has been performed in accordance with the requirements.

10.2.2 All sections of the fumigation certificate are mandatory and must be filled out correctly to ensure the certificate can be accepted.

10.2.3 An example fumigation certificate is provided at Appendix 2: Example fumigation certificate.

10.2.4 The fumigation certificate travels with the consignment to state that it has been effectively treated for QPS purposes.

Appendix 1: Example record of fumigation

Methyl Bromide - Record of Fumigation

Job Details			
Job Identification	Customer Name	Start Date of Fumigation	Location
Description of Consignment			
Target of Fumigation		Container Numbers / Consignment Identification	

Fumigation Details			
The consignment complies with the following requirements: Adequate free airspace, no impervious surfaces or wrapping, maximum timber thickness & spacing ☐ Yes ☐ No			
☐ Sheeted Stack ☐ Sheeted Container/s Size: _____ Qty: _____	Length = _____ Width = _____ Height = _____	☐ Un-sheeted Container ☐ Chamber	Volume (m^3)
Specified Dose Rate g/m^3	Exposure Period hrs	Forecast Minimum Temp °C	Dose Rate Used g/m^3
Calculated Dose g	Chloropicrin ☐ N/A %	Actual Dose Applied g	Time Dosing Finished

Concentration Readings									
Phase	**Time of Reading**	**Standard g/m^3**	**Monitor Line Readings by Location**					**Equilibrium Calculation**	**Top-up Dose**
			1:	2:	3:	4:	5:		
Start								%	
								%	
During									
End									
Comments									

Ventilation			
Initial TLV ppm	Date & Time Taken	2nd TLV Reading ppm	Date & Time Taken
Fumigator in Charge		**Government Officer (if supervised)**	
Name	Signature	Name	Signature

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Appendix 2: Example record of fumigation for perishable commodities

Australian Government
Department of Agriculture and Water Resources

Methyl Bromide – Record of Fumigation for Perishables

Job Details			
Job Identification	Customer Name	Date of Fumigation	Location
Consignment Identification		Certificate Reference	
Description of Consignment		Description of Packaging	

Fumigation Details				
Treatment Dose Rate g/m^3 hrs	Treatment Temp °C	Dose Rate Used g/m^3	Volume m^3	Dose Amount g
Load Factor:	Maximum: _____ % Estimated: _____ %	**Probe location:**	☐ Inside packaging ☐ Inserted into pulp	Time Dosing Finished

Temperature Readings							**Time**
1:	**2:**	**3:**	**4:**	**5:**	**6:**	**7:**	

Concentration Readings									
Phase	**Time of Reading**	**STD g/m^3**	**Free airspace**			**Inside packaging**			**Equilibrium Calculation**
			1:	**2:**	**3:**	**1:**	**2:**	**3:**	
Start									%
									%
End									

Comments	Final TLV _____ ppm Time Achieved

Fumigator in Charge		**Government Officer (if supervised)**	
Name	Signature	Name	Signature

Appendix 3: Example fumigation certificate

COMPANY LETTERHEAD

(including address as it appears on the treatment providers list)

METHYL BROMIDE FUMIGATION CERTIFICATE

Certificate number: ☐ **Registration number:** ☐

TARGET OF FUMIGATION DETAILS

Target of fumigation: ☐ Commodity ☐ Packing ☐ Both Commodity and Packing

Commodity: ..... Quantity: .....

Consignment link: .....

Country of origin: ..... Port of loading: ..... Country of destination: .....

Name and address of exporter:	Name and address of importer:
.....	.....
.....	.....
.....	.....

TREATMENT DETAILS

Date fumigation completed: ...../...../..... Place of fumigation: .....

Department of Agriculture and Water Resources prescribed dose rate (g/m^3): ..... Exposure period (hours): .....

Forecast minimum temp (°C): ..... Applied dose rate (g/m^3): .....

How was the fumigation conducted? ☐ Un-sheeted container ☐ Sheeted container/s

☐ **Chamber** ☐ Pressure-tested container ☐ Sheeted stack

Container number/s (where applicable): .....

Does the target of the fumigation conform to the plastic wrapping, impervious surface and timber thickness requirements at the time of fumigation? Yes ☐ No ☐

Ventilation Final TLV reading (ppm): ..... (not required for stack or permanent chamber fumigations)

DECLARATION

By signing below, I, the accredited fumigator responsible, declare that these details are true and correct and the fumigation has been carried out in accordance with all the requirements in the Methyl Bromide Fumigation Standard.

ADDITIONAL DECLARATIONS

.....

.....

.....

..... Signature ..... Date

..... Name of Accredited Fumigator ..... Accreditation Number

Company stamp

~~21.~~20.

Appendix 4: Methyl bromide monitoring table

Dosing Phase	Initial Dose	32 g/m³	40 g/m³	48 g/m³	56 g/m³	64 g/m³	72 g/m³	80 g/m³	88 g/m³	128 g/m³	Dosing is complete once ALL the required amount of gas has been applied to the enclosure.
Gas Distribution Phase Start Point	¼ - ½ hr 85%or more of initial dose	32 / 27.2	40 / 34	48 / 40.8	56 / 47.6	64 / 54.4	72 / 61.2	80 / 68	88 / 74.8	128 / 108.8	Start Point is achieved when ALL concentration readings are at or above the Standard.
	½ - 1 hr 75%or more of initial dose	32 / 24	40 / 30	48 / 36	56 / 42	64 / 48	72 / 54	80 / 60	88 / 66	128 / 96	
	> 1 hr 70%or more of initial dose	32 / 22.4	40 / 28	48 / 33.6	56 / 39.2	64 / 44.8	72 / 50.4	80 / 56	88 / 61.6	128 / 89.6	
Fumigation Phase Methyl Bromide Concentration After Start Point	2 hrs 60%or more of initial dose	24.2 / 19.2 / 14.2	29 / 24 / 19	33.8 / 28.8 / 23.8	38.6 / 33.6 / 28.6	46.4 / 38.4 / 30.4	51.2 / 43.2 / 35.2	56 / 48 / 40	60.8 / 52.8 / 44.8	84.8 / 76.8 / 68.8	The duration of the fumigation is measured from when the Start Point is achieved. For example, if a 24 hr fumigation reaches Start Point 1 ½ hrs after dosing, the fumigation is completed 25 ½ hrs after applying the dose and ALL concentrations at are or above the standard specified for 24 hrs.
	4 hrs 50%or more of initial dose	21 / 16 / 11	25 / 20 / 15	29 / 24 / 19	33 / 28 / 23	40 / 32 / 24	44 / 36 / 28	48 / 40 / 32	52 / 44 / 36	72 / 64 / 56	
	12 hrs 35%or more of initial dose	16.2 / 11.2 / 6.2	19 / 14 / 9	21.8 / 16.8 / 11.8	24.6 / 19.6 / 14.6	30.4 / 22.4 / 14.4	33.2 / 25.2 / 17.2	36 / 28 / 20	38.8 / 30.8 / 22.8	52.8 / 44.8 / 36.8	
	24 hrs 30%or more of initial dose	14.6 / 9.6 / 4.6	17 / 12 / 7	19.4 / 14.4 / 9.4	21.8 / 16.8 / 11.8	27.2 / 19.2 / 11.2	29.6 / 21.6 / 13.6	32 / 24 / 16	34.4 / 26.4 / 18.4	46.4 / 38.4 / 30.4	
	48 hrs 25%or more of initial dose	13 / 8 / 3	15 / 10 / 5	17 / 12 / 7	19 / 14 / 9	24 / 16 / 8	26 / 18 / 10	28 / 20 / 12	30 / 22 / 14	40 / 32 / 24	

A = Standard Concentration
B = Minimum concentration to allow top-up
C = Maximum top-up concentration

Version May 2016

Appendix 5: Concentrations for dose rates and times

		Minimum Standard Concentrations Required (g/m^3)												
Hours	**Retention**	**32**	**48**	**56**	**64**	**72**	**80**	**88**	**96**	**104**	**128**	**136**	**144**	**152**
½	75.00%	24.0	36.0	42.0	48.0	54.0	60.0	66.0	72.0	78.0	96.0	102.0	108.0	114.0
1	70.00%	22.4	33.6	39.2	44.8	50.4	56.0	61.6	67.2	72.8	89.6	95.2	100.8	106.4
2	60.00%	19.2	28.8	33.6	38.4	43.2	48.0	52.8	57.6	62.4	76.8	81.6	86.4	91.2
3	54.80%	17.5	26.3	30.7	35.1	39.5	43.8	48.2	52.6	57.0	70.1	74.5	78.9	83.3
4	50.00%	16.0	24.0	28.0	32.0	36.0	40.0	44.0	48.0	52.0	64.0	68.0	72.0	76.0
5	47.80%	15.3	22.9	26.8	30.6	34.4	38.2	42.1	45.9	49.7	61.2	65.0	68.8	72.7
6	45.70%	14.6	21.9	25.6	29.2	32.9	36.6	40.2	43.9	47.5	58.5	62.2	65.8	69.5
7	43.70%	14.0	21.0	24.5	28.0	31.5	35.0	38.5	42.0	45.4	55.9	59.4	62.9	66.4
8	41.80%	13.4	20.1	23.4	26.8	30.1	33.4	36.8	40.1	43.5	53.5	56.8	60.2	63.5
9	40.00%	12.8	19.2	22.4	25.6	28.8	32.0	35.2	38.4	41.6	51.2	54.4	57.6	60.8
10	38.30%	12.3	18.4	21.4	24.5	27.6	30.6	33.7	36.8	39.8	49.0	52.1	55.2	58.2
11	36.60%	11.7	17.6	20.5	23.4	26.4	29.3	32.2	35.1	38.1	46.8	49.8	52.7	55.6
12	35.00%	11.2	16.8	19.6	22.4	25.2	28.0	30.8	33.6	36.4	44.8	47.6	50.4	53.2
16	33.35%	10.7	16.0	18.7	21.3	24.0	26.7	29.3	32.0	34.7	42.7	45.4	48.0	50.7
20	31.65%	10.1	15.2	17.7	20.3	22.8	25.3	27.9	30.4	32.9	40.5	43.0	45.6	48.1
24	30.00%	9.6	14.4	16.8	19.2	21.6	24.0	26.4	28.8	31.2	38.4	40.8	43.2	45.6
28	29.15%	9.3	14.0	16.3	18.7	21.0	23.3	25.7	28.0	30.3	37.3	39.6	42.0	44.3
32	28.31%	9.1	13.6	15.9	18.1	20.4	22.6	24.9	27.2	29.4	36.2	38.5	40.8	43.0
36	27.47%	8.8	13.2	15.4	17.6	19.8	22.0	24.2	26.4	28.6	35.2	37.4	39.6	41.8
40	26.64%	8.5	12.8	14.9	17.0	19.2	21.3	23.4	25.6	27.7	34.1	36.2	38.4	40.5
44	25.82%	8.3	12.4	14.5	16.5	18.6	20.7	22.7	24.8	26.9	33.0	35.1	37.2	39.2
48	25.00%	8.0	12.0	14.0	16.0	18.0	20.0	22.0	24.0	26.0	32.0	34.0	36.0	38.0
Minimum concentration to allow top-up is		- **5g/m³** below the Standard Concentration			- **8g/m³** below the Standard Concentration									
Maximum top-up concentration		**+ 5g/m³** above the Standard Concentration			**+ 8g/m³** above the Standard Concentration									

Concentration readings must be equal to or above the required concentrations specified for the hour preceding the reading. For example, a reading taken at 2.5 hours must be equal to or above the concentrations specified at 2 hours in the above table.

If the concentration measuring instrument used can only read in whole grams then the Minimum Standard Concentration required must be rounded up to the nearest whole number.

Appendix 6: Concentrations for dose rates for fumigations that require 80% retention

	Minimum Standard Concentrations Required (g/m^3)												
Starting Concentration	**32**	**48**	**56**	**64**	**72**	**80**	**88**	**96**	**104**	**128**	**136**	**144**	**152**
Minimum Concentration	25.6	38.4	44.8	51.2	57.6	64.0	70.4	76.8	83.2	102.4	108.8	115.2	121.6

If the instrument used only reads in whole grams the Standard Concentration must be rounded up to the nearest whole number.

Glossary

Ambient temperature	The air temperature of the surrounding area where the fumigation will be conducted.
Buffer zone	The area around the enclosure, outside of which, the concentration levels of methyl bromide should not exceed the TLV–TWA during ventilation.
Chloropicrin	A strong–smelling chemical commonly added to the odourless methyl bromide to indicate the presence of gas.
Commodity	The item or goods that are being exported or imported.
Concentration	The amount of fumigant present at a certain point in the fumigation enclosure, usually expressed as grams per cubic metre (g/m^3).
Consignment	Refers collectively to the commodity, any packing materials used and the mode of transport such as a shipping container.
Dosage	The cumulative concentration of fumigant in the enclosure over the exposure period. Also referred to as the Concentration by Time Product (CT Product) normally expressed as gram hours per cubic metre.
Dose	The amount of fumigant applied to a fumigation enclosure.
Dose rate	The prescribed concentration of fumigant to be used per unit of volume and the exposure period.
Enclosure	Any gas–tight space intended to contain sufficient concentrations of fumigant for a period of time. Common examples of fumigation enclosures used for QPS fumigations are sealed shipping containers, gas–proof sheets sealed to an impervious floor and purpose–built chambers
Equilibrium	An even distribution of fumigant throughout the enclosure.
Exposure period	The amount of time, in one continuous block, that the consignment must be exposed to sufficient concentration levels of fumigant to be lethal to the targeted pests.
Free air space	Empty space in the enclosure between, above or around a commodity.
Fumigant	A chemical, which at a particular temperature and pressure can exist in a gaseous state in sufficient concentration and for sufficient time to be lethal to insects and other pests
Fumigation sheets	A sheet (or tarpaulin) that is made of material impervious to the fumigant used to create a temporary fumigation enclosure.
ISPM15	International Standards for Phytosanitary Measures No. 15 – Regulation of wood packaging material in International trade
Load factor	Specifies the maximum volume of space that the commodity can occupy in the enclosure to achieve rapid fumigation circulation. Normally expressed as a percentage (for example, maximum load factor of 50%).

Maximum top-up concentration	The concentration used to calculate the amount of fumigant to be added to the enclosure when topping-up.
Minimum top-up concentration	The absolute minimum concentration below which levels fumigant concentration must not fall at any time during the exposure period.
Sampling tube	A small diameter tube used to draw a sample of gas/air mixture from within a fumigation enclosure to measure the fumigant concentration.
Pascal (Pa)	The standard international unit for pressure. Standard atmospheric pressure is 101.325 kPa.
Perishable commodities	Commodities such as, cut flowers, fresh fruit, vegetables and nursery stock that will deteriorate rapidly if not stored or transported under suitable conditions.
Permeability	The rate at which a substance (such as methyl bromide) passes through a material (such as a fumigation sheet).
Pest	Any animal, plant or other organism that may pose a threat to the community or the natural environment.
Quarantine pest	A pest of potential economic and/or environmental importance to an area where it is not yet present, or is present but not widely distributed and is being officially controlled.
Quarantine and Pre–shipment (QPS)	*a) "Quarantine applications", with respect to methyl bromide, are treatments to prevent the introduction, establishment and/or spread of quarantine pests (including diseases), or to ensure their official control, where:* *i. Official control is that performed by, or authorised by, a national plant, animal or environmental protection or health authority;* *ii. Quarantine pests are pests of potential importance to the areas endangered thereby and not yet present there, or present but not widely distributed and being officially controlled* *b) "Pre–shipment applications" are those non–quarantine applications applied within 21 days prior to export to meet the official requirements of the importing country or existing official requirements of the exporting country;* This definition is based on the Montreal Protocol which is seeking to phase–out methyl bromide for non–QPS uses by 2015. Methyl Bromide: Quarantine and Preshipment Uses (PDF 554KB).
Record of fumigation	A document that records the relevant information to demonstrate the fumigation complied with requirements.
Relevant authority	The government department, ministry or agency responsible for animal and plant biosecurity in the importing or exporting country.
Risk area	The area around the enclosure to which access is restricted to personnel wearing personal protective equipment.

Sheet fumigation	A process of creating a gas–tight enclosure by covering/enclosing the commodities to be fumigated under a gas–proof sheet.
Shipping container	Standardised transportation units that can be moved from one mode of transport to another without needing to unload the contents.
Sorption/sorptive	A physical and chemical by which one substance becomes attached to another. De-sorption is the reversal of this process.
Standard concentration	The fumigant concentration below which the fumigation will not be effective unless additional fumigation is added to the enclosure to compensate.
Target of the fumigation	The target of the fumigation may be the commodity, packaging material or both.
Treatment	Application of a set of specified requirements intended to kill pests and diseases that may be associated with a consignment.
Threshold Limit Value – Time Weighted Average (TLV–TWA)	TLV–TWA is the maximum concentration of fumigant that a person can be repeatedly exposed to in the workplace without harmful effects. This figure is based on an 8 hour day, 40 hour working week.

附件18、ICCBA-溴化甲烷程序0.8版

INTERNATIONAL CARGO COOPERATIVE BIOSECURITY ARRANGEMENT - METHYL BROMIDE SCHEDULE

Version 0.8

PURPOSE AND SCOPE

1.1 This document describes the procedures for the implementation and management of methyl bromide treatments destined for export between Participating Agencies to ensure compliance with the "ICCBA Methyl Bromide Fumigation Methodology", in the absence of specific importing country requirements.

DEFINITIONS

For the purposes of this Schedule, the following definitions apply:

1.2 ***Accredited Officer*** means an officer, appointed or acting for the Participating Agency, who has been assessed as competent in accordance with ICCBA–MB requirements.

1.3 ***Accredited Person*** means a person who has been assessed as competent by the Authorising Agency in accordance with ICCBA–MB requirements.

1.4 ***Agency*** means the authority[2] responsible for the management of biosecurity systems.

1.5 ***Authorising Agency*** means the relevant Participating Agency in the exporting country.

1.6 ***Endorsing Agency*** means an Authorising Agency that is endorsing the fumigation of a non-Registered Treatment Provider, where the Authorising Agency has the services of an Accredited Officer.

1.7 ***Fumigation Treatment Certificate*** means a document issued by a Registered Treatment Provider which declares that the consignment has been treated in accordance with the requirements of this Schedule.

1.8 ***ICCBA*** means the International Cargo Cooperative Biosecurity Arrangement.

1.9 ***ICCBA–MB*** means the International Cargo Cooperative Biosecurity Arrangement – Methyl Bromide Schedule endorsed by the ICCBA Steering Committee.

1.10 ***ICCBA–MB Guide*** means the "Guide to performing QPS fumigations with methyl bromide" endorsed by the ICCBA-MB Standing Working Group.

1.11 ***ICCBA–MB Methodology*** means the "ICCBA Methyl Bromide Fumigation Methodology" endorsed by the ICCBA Steering Committee.

1.12 ***ICCBA-MB Trainer*** means an Accredited Officer or Accredited Person appointed by a Participating Agency, or acting for the Participating Agency for the purpose of training and accrediting officers and persons.

[2]The agency may or may not have the delegated responsibility for that country's legislative or administrative authority under the National Plant Protection Organisation (NPPO) and/or the OIE for its actions.

1.13 ***ICCBA–MB training package*** means the training and accreditation endorsed by the ICCBA–MB Standing Working Group, which provides instruction on how to conduct methyl bromide fumigations in accordance with the ICCBA-MB Methodology.

1.14 ***Importing Agency*** means the relevant Participating Agency in the country that is receiving goods treated under this Schedule.

1.15 ***ISO*** means International Organisation for Standardisation.

1.16 ***Joint System Review (JSR)*** means the review of an Authorising Agency's performance and management of ICCBA – MB conducted jointly with another Participating Agency.

1.17 ***Member Agency*** means an Agency which is participating in ICCBA.

1.18 ***Participating Agency*** means a Member Agency which is a signatory to ICCBA-MB.

1.19 ***Registered Treatment Provider*** means a fumigation company that meets the requirements of ICCBA–MB and is registered under this Schedule.

MANAGEMENT

1.20 Each Participating Agency will implement and administer a system within their own jurisdiction for managing its requirements under ICCBA-MB.

1.21 All treatments conducted under ICCBA–MB will comply with the requirements of the ICCBA-MB Methodology.

1.22 ICCBA–MB accreditation allows Accredited Officers or Accredited Persons to perform treatments, only where they are permitted to do so under their local legislative and regulatory requirements.

IMPORT CLEARANCE MANAGEMENT

1.23 Each Participating Agency will ensure that the importation of consignments treated by an 'Acceptable' ICCBA–MB Registered Treatment Provider, or endorsed by an Endorsing Agency, and accompanied by valid certification is cleared efficiently.

1.24 Where an Importing Agency detects ineffective treatments or documentation irregularities under ICCBA–MB, they will notify the Authorising Agency in writing as soon as practicable and provide relevant information that would assist the Authorising Agency to investigate its possible cause.

1.25 Consignments shipped in accordance with ICCBA–MB must also comply with other relevant requirements of the Importing Agency.

TRAINING AND ACCREDITATION

1.26 Each Agency will establish their own ICCBA–MB training team to provide training for the accreditation of Accredited Officers and Accredited Persons against the requirements of the ICCBA–MB training package.

1.27 Accredited Officers and Accredited Persons must undergo re-accreditation at least once every three years.[A2]

1.28 Training and accreditation must only be conducted by ICCBA-MB Trainers.

1.29 A Participating Agency may assist another Participating Agency to administer training and conduct assessments of Accredited Officers and Accredited Persons, subject to the mutual agreement of the two Participating Agencies.

1.30 The training and competency assessments of ICCBA–MB Trainers may be supervised by any Participating Agency, subject to the mutual agreement of the two Participating Agencies.

1.31 Upon successful completion of the ICCBA–MB training package, each participant will be issued with a certificate of accreditation by the Authorising Agency. The certificate will, at a minimum, include the following:

a) name of the Participating Agency issuing the certificate

b) reference to ICCBA–MB fumigation training

c) accreditation number

d) name of the person accredited

e) location and date the training was conducted

f) name and signature of the assessing ICCBA-MB Trainer.

1.32 ICCBA–MB accreditation is specific to individuals and recognises their competency. An individual's accreditation stays with them if they change Registered Treatment Providers.

REGISTRATION OF TREATMENT PROVIDERS

1.33 Each Authorising Agency will maintain a register of ICCBA–MB Registered Treatment Providers in its respective jurisdiction. Each Authorising Agency's register will:

a) be linked to the ICCBA–MB member database administered by the ICCBA Secretariat[A3]

b) list each registered treatment provider with a unique registration number; and

c) identify the Registered Treatment Provider and indicate their current registration status

1.34 Before listing a Registered Treatment Provider on the database, Authorising Agencies will ensure that each Registered Treatment Provider complies with ICCBA–MB requirements.

1.35 Each Participating Agency will also be issued with a separate ICCBA–MB registration number for use as an Endorsing Agency.

1.36 The ICCBA–MB registration number will be included on all treatment certificates.

1.37 The format of the registration number will be:

CC0001MB

Where:

a) CC is the ISO 2 letter country code

b) 0001 is a unique numeric identifier; and

c) MB means ICCBA-MB

1.38 Where a Registered Treatment Provider, or Endorsing Agency has multiple branches, each branch will be issued with a separate registration number. Each branch must only use their unique ICCBA–MB registration number to certify treatments performed or supervised by that branch.

1.39 ICCBA–MB registration numbers will not be reassigned regardless of the status of the treatment provider, including the cessation of its operations.

1.40 The registration status of Registered Treatment Providers listed under item 6.1 (c) of this Schedule will be classified into one of the following four categories, in accordance with the procedures outlined on the ICCBA Secretariat's centralised database:

a) Acceptable

The treatment provider meets all requirements for full registration. The Authorising Agency is confident that the treatment provider is conducting treatments in accordance with ICCBA – MB requirements.

b) Under Investigation

The treatment provider is suspected of having ineffective practices and will require an Endorsing Agency supervise and accredit treatments under ICCBA-MB.

c) Suspended

The treatment provider's practices are deficient or major documented irregularities have been identified that are critical. The Authorising Agency is not confident that the treatment provider is performing treatments in accordance with ICCBA–MB requirements.

d) Withdrawn

The treatment provider has voluntarily withdrawn from ICCBA–MB.

1.41 Participating Agencies will promptly notify each other and the ICCBA Secretariat, in writing, of any amendments to treatment provider registration status and other details to allow for the updating of treatment provider lists.

1.42 Agencies will not be liable for any losses incurred as a result of errors of facts or omissions on the register.

CERTIFICATION

1.43 Accredited Officers acting for an endorsing agency may endorse a treatment conducted by a non–ICCBA–MB registered; withdrawn; or suspended treatment provider, if:

a) the treatment was conducted under direct supervision by a Accredited Officer who is satisfied that the treatment was effective and carried out in accordance with ICCBA–MB requirements, and

b) the treatment certificate is issued on the Endorsing Agency's letterhead and meets the certification requirements of the ICCBA-MB Methodology.

1.44 Where product is not accompanied by a phytosanitary certificate, Importing Agencies may accept methyl bromide treatment certificates that are:

a) issued by an 'Acceptable' Registered Treatment Provider, or Endorsing Agency, and include an ICCBA–MB registration number on or after the date this Schedule comes into effect; or

b) meet the requirements of ICCBA-MB; or

c) other alternative treatment certificates which have been mutually decided by the two Agencies.

MANAGING REGISTERED TREATMENT PROVIDERS

1.45 Where a failed treatment is reported to an Authorising Agency, the Authorising Agency will investigate and report back within 10 business days, unless otherwise mutually decided between the Agencies. If that reporting period is not met the registered treatment provider will be identified as being 'Under Investigation'.

1.46 The Authorising Agency will advise the Importing Agency that reported the failed treatment, and the ICCBA Secretariat, of the outcome of the investigation, and recommend whether the registered treatment provider should be reinstated as 'Acceptable' or 'Suspended'.

AUDITING OF REGISTERED TREATMENT PROVIDERS

1.47 Authorising Agencies will perform compliance audits on each Registered Treatment Provider in their own jurisdiction to determine if ICCBA–MB requirements are being met. Audits will be conducted:

a) by ICCBA–MB Accredited Officers

b) within six months from the date of a Registered Treatment Provider's being listed as 'Acceptable'; and

c) at least once in every 12 month period thereafter.

1.48 The outcome of each audit will be 'Acceptable', 'Acceptable with Corrective Actions' or 'Suspended'.

1.49 The outcomes of all audits will be documented and made available to any Participating Agency upon request.

1.50 Where a Registered Treatment Provider has not been audited in two years, its registration status will be changed to 'Suspended'.[A4]

1.51 Where a Registered Treatment Provider has been 'Suspended' or has 'Withdrawn' from ICCBA–MB they will be required to pass an audit to be reinstated to 'Acceptable' status.

JOINT SYSTEM REVIEWS (JSR)

1.52 Participating Agencies will conduct JSRs on Authorising Agencies to evaluate the effectiveness of an Authorising Agency's management of ICCBA–MB, JSRs:

a) will include a review of the Authorising Agency's documentation relating to its management of ICCBA-MB; and

b) may include supervising the Authorising Agency conduct compliance audits on a selection of registered treatment providers.

1.53 JSR timetables for the year and general administrative requirements will be arranged between the relevant Participating Agencies and will be coordinated by the Secretariat.

1.54 Members of the JSR team will be chosen by mutual understanding of the Participating Agencies. Subject to such agreement, non-participating Agencies, may attend a JSR as an observer.

1.55 Observers of a JSR will have no bearing on the decisions made during, or outcomes of, the JSR.

1.56 A written report on the outcome of the JSR will be provided to the Authorising Agency, with a copy forwarded to all ICCBA Participating Agencies and the ICCBA Secretariat.

DOCUMENTATION AND RECORD KEEPING

1.57 Authorising Agencies are required to keep records of the following documents for at least three years:[A5]

a) training and accreditation records for Accredited Officers, Accredited Persons and ICCBA-MB Trainers

b) registration records of Registered Treatment Providers

c) audit records of Registered Treatment Providers

d) notifications of failed, or suspected failed, treatments received from other Participating Agencies

e) previously conducted JSR reports

DISPUTE RESOLUTION

1.58 Where a Participating Agency suspects serious deficiencies in an Authorising Agency's management of ICCBA-MB, it may refer the matter to the Standing Working Group.

1.59 Where an Authorising Agency's performance has been referred to the Standing Working Group, the Standing Working Group will conduct a review of the available evidence and may request that a JSR be conducted. Where serious deficiencies are confirmed, the Standing Working Group will, by written notice, request the Authorising Agency show cause as to why its participation in ICCBA-MB should not be suspended or revoked.

1.60 Where an Authorising Agency has been requested to show cause by the Standing Working Group, it will respond in writing within 90 days or will have their participation in ICCBA-MB suspended.

1.61 Members of the Standing Working Group, except the Authorising Agency, will review all responses to show cause requests and will determine appropriate courses of action.[A6]

附件19、ICCBA-熱處理操作方法0.7版

Heat treatment methodology

Version 0.7

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Purpose

This methodology sets out the minimum requirements for treatment providers performing heat treatments on commodities and/or associated packaging suited to such treatments for Quarantine and Pre–shipment (QPS) purposes. This methodology is the basis for compliance auditing of treatment providers to monitor their performance of effective QPS treatments using hot forced air.

Importing countries have the right to impose more stringent treatment conditions to address their individual biosecurity risks. In such cases, those additional conditions take precedence over the requirements of this methodology and must be complied with to the satisfaction of the relevant authority of the importing country.

Heat treatment providers registering to perform treatments in accordance with these requirements must have the equipment, facilities, accredited operators, management and administrative procedures necessary to ensure that all relevant treatments comply with these requirements.

Countries receiving heat treatment certification through this system expect the treatment has been undertaken in accordance with this methodology. Heat treatment providers found to be wilfully and consistently not complying with the requirements of this methodology and/or other specified treatment conditions will have their registration status changed to 'unacceptable', until such time as they can demonstrate satisfactory compliance.

Scope

This document applies to commercial and government treatment providers performing QPS heat treatments for countries that have adopted a specific heat treatment schedule.

All heat treatment methods included in this methodology use heated air that is forcibly circulated to raise the core temperature of the consignment to the specified treatment temperature and maintain it for the specified treatment period.

The heat treatments covered by this methodology are limited to; forced dry air, humidity controlled forced air and kiln drying.

While the intended outcome of each treatment method is the same, the mode of action of all three heat treatment methods is different.

This document is not intended to specifically cover the performance of heat treatments under ISPM 15, however, the basic principles, requirements and recommendations described in this methodology and the associated guideline are the basis for good treatment practice.

How to use this document

Some of the requirements in this methodology only apply in certain circumstances, generally related to the type of commodity being treated. It is important for the heat treatment providers and compliance auditors to understand the purpose of the requirements and the outcomes they are intended to achieve as well as the particular circumstances in which they apply.

This methodology should be read in conjunction with the *ICCBA Guide to Performing QPS Heat Treatments Using Hot Forced Air* which provides information on how to meet these requirements in commonly encountered situations.

Contents

Prior to conducting the heat treatment

1.1 Target of heat treatment

1.61.1 The target of the heat treatment must be identified.

1.62 Consignment Suitability

1.62.1 The consignment must be suitable for heat treatment.

1.63 Loading and free air space

1.63.1 The consignment must be loaded to allow even distribution of hot air throughout the heat treatment chamber.

1.63.2 The consignment must be loaded in the heat treatment chamber with separation between items to allow for effective circulation of hot air.

1.63.3 The consignment must be loaded off the floor of the heat treatment chamber to provide free air space under the target of the heat treatment and to prevent cooling influences from the ground.

1.63.4 Where a treatment schedule specifies a maximum load factor, the volume of the consignment must not exceed the specified load factor as a proportion of the volume of the heat treatment chamber.

1.64 Heat treatment chamber suitability

1.64.1 The heat treatment chamber must be capable of achieving and maintaining the required treatment temperature for the duration of the required treatment period.

Performing the heat treatment

1.65 Hot air delivery and circulation

1.65.1 The heat treatment chamber must have heat sources to raise and maintain the temperature of the heat treatment chamber to the required treatment temperature.

1.65.2 The heat treatment chamber must be capable of distributing and circulating hot air in a way that ensures the ambient temperature, and core temperature of the target of the heat treatment, are raised and maintained above the required treatment temperature.

1.66 Performing the heat treatment

1.66.1 All heat treatments must be undertaken in accordance with the specific treatment schedule for the target of the heat treatment.

1.66.2 The start of the treatment period commences only when all free air space temperature measuring points are at least 0.5°C above the required treatment temperature.

1.66.3 Where the treatment schedule requires that the core temperature of the target of the heat treatment be monitored, the start of the treatment period commences only when all core temperature measuring points are at least 0.5°C above the required treatment temperature.

1.66.4 The core temperature of the consignment and the free air space within the heat treatment chamber must be raised at least 0.5°C above the required treatment temperature and then maintained above this temperature for the required treatment period.

Monitoring the heat treatment

1.67 Treatment measuring equipment

1.67.1 All measuring equipment must be individually identified for data recording.

1.67.2 All applicable heat treatment measuring equipment must be calibrated in accordance with the manufacturer's instructions, international standards or appropriate national standards.

1.67.3 Temperature sensors and core probes must, at a minimum, be capable of measuring the range between 0°C and 100°C, to an accuracy of within + or - 0.5°C.

1.67.4 Humidity sensors must be capable of measuring to an accuracy within + or - 2 % relative humidity.

1.68 Free air space temperature sensors

1.68.1 The heat treatment chamber must have means of measuring the temperature of the free air space within the heat treatment chamber.

1.68.2 The free air space temperature must be measured by a minimum of XXX temperature sensors[A7].

1.68.3 The free air space temperature sensors must be placed within the heat treatment chamber in a way that would indicate that the free airspace temperature throughout the heat treatment chamber has been raised above the required treatment temperature for the required treatment period. The temperature sensors must not be placed too close to the heat source so as to affect their measurement readings.

1.69 Core temperature sensors

1.69.1 Where the treatment schedule requires that the core temperature of the target of the heat treatment be monitored, the heat treatment must have a means of measuring the temperature of the consignment.

1.69.2 The core temperature must be monitored by inserting temperature sensors into the core of at least XXX individual items of the target of the heat treatment[A8]. The sensors must be placed as close as practicable to:

- the bottom of the commodity furthest away from the heat source/s
- the top of the commodity furthest away from the bottom probe[A9]

1.69.3 Where the consignment is not uniform in size, core temperature sensors must be inserted into the largest example of the target of the heat treatment.

1.69.4 Where the inserting core temperature sensors will damage the consignment, a substitute of the same thickness and thermal property may be used.

1.69.5 Where holes must be drilled into the centre of the target of the heat treatment, holes must be:

- as small as practicable while allowing the probe to be inserted

- plugged behind the probe
- away from heat conductors such as metal nails and screws

1.69.6 Where core temperature sensors cannot be inserted into the centre of target of the heat treatment because individual items are too small, probes must be inserted into the middle of the packaging encasing the items.

1.70 Humidity sensors

1.70.1 Where the treatment schedule requires the relativity humidity of the heat treatment chamber to be monitored, the heat treatment chamber must have means of measuring the relative humidity of the free air space within the heat treatment chamber.

1.70.2 Where the heat treatment chamber is designed for humidity controlled forced air heat treatments, the relative humidity of the heat treatment chamber must be measured by a minimum of one humidity sensor.

1.71 Monitoring readings

1.71.1 The temperature readings must be monitored and recorded at:

- the start of the treatment period; and
- at the half way point of the required treatment period; and
- at the completion of the required treatment period. [A10]

1.71.2 Where the heat treatment process extends for more than 24 hours, temperature readings must be monitored and recorded at least every 24 hours. [A11]

1.71.3 Where relative humidity monitoring is required by the treatment schedule, readings must be monitored and recorded at the same time the temperature readings are recorded.

1.71.4 All required readings must be monitored and recorded either:

- manually; or
- using data logging equipment.

1.71.5 Where treatment schedules don't require core temperature monitoring and recording, testing must be conducted and documented on each load configuration and temperature profile. Tests must be conducted every two years,[A12] and test methodology and results must be kept for two years for audit purposes.[A13]

1.72 End of treatment period

1.72.1 At the completion of the treatment period all readings taken during the monitoring of the heat treatment must be at or above the required treatment temperature.

1.72.2 The core temperature of the target of the heat treatment must have been raised and maintained above the required treatment temperature for the required treatment period.

1.72.3 Where the treatment schedule requires the relativity humidity of the ambient air inside the chamber be measured, the relative humidity must not have fallen below the required relative humidity for the required treatment period.

1.72.4 The heat treatment has failed if at any time during the treatment [A14]period the temperature, or where required relative humidity, falls below the required treatment temperature.

1.72.5 Where a heat treatment has failed, re-treatment of the target of the heat treatment must be performed before a treatment certificate can be issued.

Documentation

1.73 Record of Heat Treatment

1.73.1 The Record of Heat Treatment must be completed for all successful, and unsuccessful, heat treatments. An example record of heat treatment is provided at Appendix 1: Example record of heat treatment.

1.73.2 The following information must be recorded in the Record of Heat Treatment to demonstrate that the heat treatment complied with requirements:

- job identification
- client, or customer, name
- date of the treatment
- location – the site address where the treatment was performed
- description of the consignment
- description of the target of heat treatment
- dimensions of the consignment
- country of destination
- consignment identification – container number/s, bill of lading, or other means to clearly identify the consignment
- specified treatment requirements
- heat treatment method
- heat treatment chamber number/s
- whether a substitute was used, and if so, its dimensions
- start and completion time of the treatment period
- all temperature, and if required relative humidity recordings, including the time the readings were taken
- treatment results
- name and signature of the heat treatment operator-in-charge.

1.73.3 The Record of Heat Treatment must be completed at the same time and location as the heat treatment is performed.

1.74 Heat treatment certificate

1.74.1 A heat treatment certificate must be issued by a suitably accredited person, once they are satisfied that the heat treatment has been performed in accordance with the requirements of this methodology and the importing country requirements.

1.74.2 All sections of the heat treatment certificate are mandatory and must be filled out correctly to provide evidence that the heat treatment has been undertaken in accordance with these requirements. An example heat treatment certificate is provided at Appendix 2: Example heat treatment certificate.

1.74.3 The heat treatment certificate accompanies the consignment to state that it has been effectively treated for QPS purposes.

1.75 Record management

1.75.1 Copies of the Record of Heat Treatment must be maintained for a minimum of two years, for audit purposes.

1.75.2 Copies of the heat treatment certificate must be maintained for a minimum of two years, for audit purposes.

1.75.3 Calibration records and/or certificates must be kept for a minimum of two years by the heat treatment provider.

Appendix 1: Example record of heat treatment[A15]

RECORD OF HEAT TREATMENT

Job Details			
Job Identification:	**Customer Name:**	**Date of Treatment:**	**Location:**

Description of Consignment:	**Target of Heat Treatment:**
Consignment Dimensions:	**Container Numbers / Consignment Identification:**

Heat Treatment Details

The consignment complies with the following requirements:

Adequate free air space and suitable for the applied heat treatment method ☐ Yes ☐ No

Heat Treatment Method: ☐ Forced Dry Air ☐ Humidity Controlled Forced Air ☐ Kiln Drying		**Specified Treatment Temperature:** °C
Specified Treatment Exposure Period: Mins/Hrs	**Specified Humidity Rate (%) (where applicable):**	**Was a Substitute used?** Yes ☐ No ☐ **If Yes, record the Substitute dimensions and material used:**
Heat Treatment Chamber Number:	**Country of Destination:**	

Heat Treatment Readings

Phase	Time and Date of Reading	Temperature Probe and Humidity Readings by Location						
			Location:	Location:	Location:	Location:	Location:	Location:
Start		Temperature						
		Humidity %						
During		Temperature						
		Humidity %						
End		Temperature						
		Humidity %						

Note: If additional temperature probes and humidity readings are taken attached these to the Record of Heat Treatment

Comments:

Heat Treatment Operator in Charge

Name:	**Signature:**

Appendix 2: Example heat treatment certificate

COMPANY LETTERHEAD

(Include address as it appears on the treatment providers list)

HEAT TREATMENT CERTIFICATE

Certificate number: | **Registration number:**

CONSIGNMENT DETAILS

Description of Consignment: **Quantity:**

Country of Origin: **Port of Loading:**

Country of Destination: **Declared Port of Entry:**

Name and Address of Exporter/Shipper:

Name and Address of Importer/Buyer/Client:

HEAT TREATMENT DETAILS

Date of Heat Treatment: **Heat Treatment Method:**

Place of Heat Treatment: **Consignment Dimensions:**

Required Treatment Temperature: °C **Treatment Exposure Period:** hr/min

Core Temperature Maintained: °C **Humidity Rate (where applicable):** %

DECLARATION

By signing below, I, the accredited treatment provider responsible, declare that these details are true and correct and the treatment has been carried out in accordance with the ICCBA Heat Treatment Methodology.

ADDITIONAL DECLARATIONS

.....

.....

..... Signature ..... Date

..... Name of Accredited treatment provider ..... Accreditation Number

Company stamp

Glossary

Term	Definition
Commodity	The items or goods that are being exported or imported.
Consignment	Refers collectively to the commodity, any packing materials used and the mode of transport such as a shipping container.
Core	The central, most inner part of the commodity/consignment being treated.
Core probe	A temperature sensor inserted into the target of the heat treatment, or an acceptable substitute, to measure the core temperature.
Core temperature	The temperature at the core of the target og the heat treatment, or an acceptable substitute.
Exposure period	The amount of time, in one continuous block, that the consignment must be exposed to sufficient temperatures, and relative humidity where required, to be lethal to the targeted pests.
~~22.~~21. orced dry air	A heat treatment method where hot air is forced into the heat treatment chamber to heat the consignment to the requirement treatment temperature. The humidity inside the heat treatment chamber is not monitored and loss of moisture from the commodity will not result in adverse effects. This method is commonly used to treat wood packaging material.
Free air space	Empty space within a heat treatment chamber between, above or around the consignment.
Heat source	An object that produces or radiates heat.
Heat Treatment Certificate	Documentation certifying that a heat treatment has been conducted in accordance with the importing country's requirements.
Heat treatment chamber	A physical container or chamber, purposely built, temporary or mobile, used for performing heat treatments.
~~23.~~22. eat Treatment provider	A heat treatment provider which has met certain requirements and is registered as an approved provider of QPS Heat Treatments by the relevant quarantine regulatory authority in the exporting country.
~~24.~~23. umidity controlled forced air (also referred to as Variable humidity heat treatment)	A heat treatment method where a percentage of relative humidity (just below dew point) is included after the initial start of the treatment process. The humidity level is managed by adding water vapour to the chamber or the controlled release of moisture laden air from the chamber. This is commonly used for commodities that may be damaged by: • excessive moisture (wetting of the commodity) that would occur during heat treatment methods, such as vapour; or • excessive moisture loss that has the potential to char, crack or combust the commodity at the specified treatment temperature over a long period of time.
~~25.~~24. umidity sensor	Refers to any instrument that is used to measure humidity.

Term	Definition
~~26.~~25. iln drying	A heat treatment method where timber is heated to extract moisture. May also satisfy biosecurity requirements where required core temperatures are reached and maintained for the treatment period specified.
~~27.~~26. oad factor	Specifies the maximum volume of space that the commodity can occupy in the enclosure to achieve rapid air circulation. Usually expressed as a percentage (for example, maximum load factor of 50%).
~~28.~~27. uarantine and Pre–shipment (QPS)	Based on the Montreal Protocol, which is seeking to phase–out methyl bromide for non–QPS uses by 2015: *a) "Quarantine applications", with respect to methyl bromide, are treatments to prevent the introduction, establishment and/or spread of quarantine pests (including diseases), or to ensure their official control, where:* *iii. Official control is that performed by, or authorised by, a national plant, animal or environmental protection or health authority;* *iv. Quarantine pests are pests of potential importance to the areas endangered thereby and not yet present there, or present but not widely distributed and being officially controlled* *b) "Pre–shipment applications" are those non–quarantine applications applied within 21 days prior to export to meet the official requirements of the importing country or existing official requirements of the exporting country;*
~~29.~~28. ecord of Heat Treatment	A document that records the relevant information to demonstrate that the heat treatment conducted complied with the requirements.
~~30.~~29. elative humidity	The amount of water vapour in the air expressed as a percentage of the amount of water that would be present in an equal volume of saturated air at the same temperature.
~~31.~~30. ubstitute	A separate item or object that has the same thermal conductivity properties as the commodity/consignment targeted for heat treatment that can be used to house a core probe when the placement of the probe may cause damage to the consignment.
~~32.~~31. arget of the heat treatment	The target of the heat treatment may be the commodity, packaging material or both.
~~33.~~32. emperature sensor	Refers to any instrument that is used to measure temperature.
~~34.~~33. reatment period	The time period for which the specified treatment temperature must be continuously maintained.
~~35.~~34. reatment schedule	Refers to importing country requirements or conditions, or other conditions that apply to the consignment.
~~36.~~35. reatment temperature	The minimum temperature required to ensure the efficacy of the treatment